









## PREFACE.

THE recognition of the fact that the Culicidae are responsible for the transmission of serious diseases has resulted in a very rapid growth of our knowledge of these insects. The "Monograph of the Culicidae," by Mr. Theobald, originally published in two volumes, with an Atlas of Plates, in 1901, has already been supplemented by two further volumes which appeared respectively in 1903 and 1907. The desirability of bringing out a new supplement is indicated by the author's statement, in the Introduction which follows, that the present volume contains descriptions of twenty-one genera and of three hundred and ninety-two species not included in Volumes I-IV.

Taking into consideration the fact that the first two volumes have for some time been out of print, it has been decided to include in the present volume some mention at least of all the species described in any of its predecessors. This enlargement, beyond the scope of a mere supplement, with the addition of tables for the determination of genera and species, should materially facilitate the use of the earlier volumes.

The new collections on which the present work is principally based have been received by Mr. Theobald, but will be handed over to the British Museum as soon as the volume is published. Among these, attention may be called to the collections received from the localities given in the subjoined list :—

- (i) Ceylon ; from E. E. Green, Esq., Government Entomologist.
- (ii) India ; from Dr. J. R. Adie.
- (iii) Andaman Islands ; from Drs. R. F. Lowis, and Ray White.
- (iv) China ; from Dr. C. E. Cornford.
- (v) West Africa ; from Dr. Creighton Wellman.
- (vi) Ashanti, etc. ; from Dr. W. M. Graham.
- (vii) The Sudan ; from Harold H. King, Esq., Entomologist to The Wellcome Research Laboratories, Gordon Memorial College, Khartum.

- (viii) Cape Colony ; from C. P. Lounshury, Esq., Government Entomologist.
- (ix) Transvaal ; from Dr. A. Copland and the late Mr. Simpson, Government Entomologist.
- (x) Uganda ; from Col. Sir David Bruce, C.B., A.M.S., F.R.S. (through the Sleeping Sickness Bureau).
- (xi) Philippines and U.S. America ; from Miss C. S. Ludlow, U.S.A. War Department.
- (xii) Australia ; from Dr. T. L. Bancroft and others.
- (xiii) Brazil ; from the Instituto de Manguinhos, Rio de Janeiro.

Other large collections, which it has not yet been possible to work out, have also been received from—

- (xiv) Egypt ; from F. Wilcockes, Esq., Entomologist to the Khedivial Agricultural Society, Cairo.
- (xv) Uganda ; from A. D. Fraser, Esq., R.A.M.C., and Dr. C. J. Baker.
- (xvi) West Australia ; from Dr. J. B. Cleland.
- (xvii) Teneriffe and Algeria ; from Lord Walsingham, F.R.S.
- (xviii) Algeria ; from the Pasteur Institute, Paris.
- (xix) Saigon ; from the Pasteur Institute, Paris.

The progress of investigation has been greatly assisted by the collectors and donors of the above collections, besides many others whom it has not been possible to mention individually. To all these and to others who have helped in the production of this work, the thanks of the Museum are due.

The Colonial Office have kindly lent twenty-eight process blocks illustrating wing-structure.

The localities from which new collections are specially desired by the Museum are—

New Zealand.	East Indies.
Australia (except Queensland).	Natal.
Tasmania.	Europe.

Specimens should be addressed to the Director.

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*Keeper of Zoology.*

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LONDON, S.W.

April, 1910.

## INTRODUCTION.

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THIS volume which I was asked to prepare by the late Director, Sir Ray Lankester, K.C.B., following on those of 1901, 1903 and 1907 (Vols. I. to IV.) does not contain, as was hoped, a complete record of all the species of *Culicidae* described since the publication of Vol. IV.

The reasons are many, foremost is the fact that the accumulated material has become so great that it is impossible to deal with any but a very scanty portion unless one can give one's whole time to the work. The writer has only been able to devote his leisure hours to this matter.

Again, the subject has been much complicated by the number of descriptions of insects, from North and Central America and the West Indies, which are wholly inadequate for correct diagnosis. This curt method of dealing with these insects can only lead to hopeless confusion, and in the end to a large synonymic list, which is already becoming great.

The creation of genera and species from larvae of which the adults are not known has made matters still worse.

In this volume nearly a complete list, with synonyms, references to the previous volumes and some other new references are given; old and new localities up to 1910 are also included.

Twenty-one new genera have been created, of which thirteen are given here for the first time.

No less than three hundred and ninety-two species have been described or old descriptions found since the last volume went to press. Of these the writer is responsible for one hundred and six, eighty of which are described in this work.

Most of the large number of species described by Messrs. Dyar and Knab from the Americas and the West Indies have been referred to in the Appendix, only the names, references and localities being given. The genera and species formed by the same observers on larval characters have not been included.

As far as leisure has allowed, synoptic tables of the genera and the species in each genus of the Anophelinae, Megarhininae, Culicinae, Heptaphlebomyinae, and Uranotaeninae have been worked out. There has not been sufficient time at my disposal to do the same with all the Aedinae, nor with the unbanded-legged species of the genus *Culex*, which form at present an unwieldy mass of species. That many errors have crept in there can be no possible doubt.

The system of classification by scale-structure apparently works out well from a practical point of view. The object of this classification has been to select some method of simple grouping by means of which medical men and others working in the field can identify these insects. That the characters given enable them to do so is proved by the numbers of collections sent correctly named, not only by British observers but by the French doctors working in harmony with them in Africa. Moreover, judging from the little we know of the bionomics of the Culicidae of the world, when looked at in a broad view, the classification by scale-structure places them in a natural grouping. This cannot be said when one considers the larval characters that have been given. Two instances may be mentioned:—The larvae of *Culex scolasticus*, Theobald, were said to be those of a *Janthinosoma*; this species, however, comes very near the type of the genus *Culex*, while *Janthinosoma* is very distinct in structure. The genera *Stegomyia*, Theobald, and *Lepidoplatys*, Coquillett, two very distinct and well-marked Culicine genera, were grouped under Meigen's *Aedes*.

No one will dispute the importance of knowing the larval characters, but in the present state of our knowledge the progress of economic science will be retarded unless great care is taken in founding taxonomic conclusions on the study of the immature forms.

The importance of palpal structure, as pointed out by Neveu-Lemaire, is undoubtedly great. It has the disadvantage, however, that in a type specimen one may be unable to count the segments. In consequence confusion may arise, as for instance in connection with the genera *Toxorhynchites* and *Worcesteria*. No one can detect the number of terminal segments in the palps of these two genera unless microscopic preparations have been made. Owing to the dense coating of scales, what look like palpi of three segments may really consist of four, five or six.

I must especially thank Mr. H. F. Carter of the South

Eastern Agricultural College for the great help he has given me in the concluding part of this volume; had it not been for his final efforts it could not have been now produced.

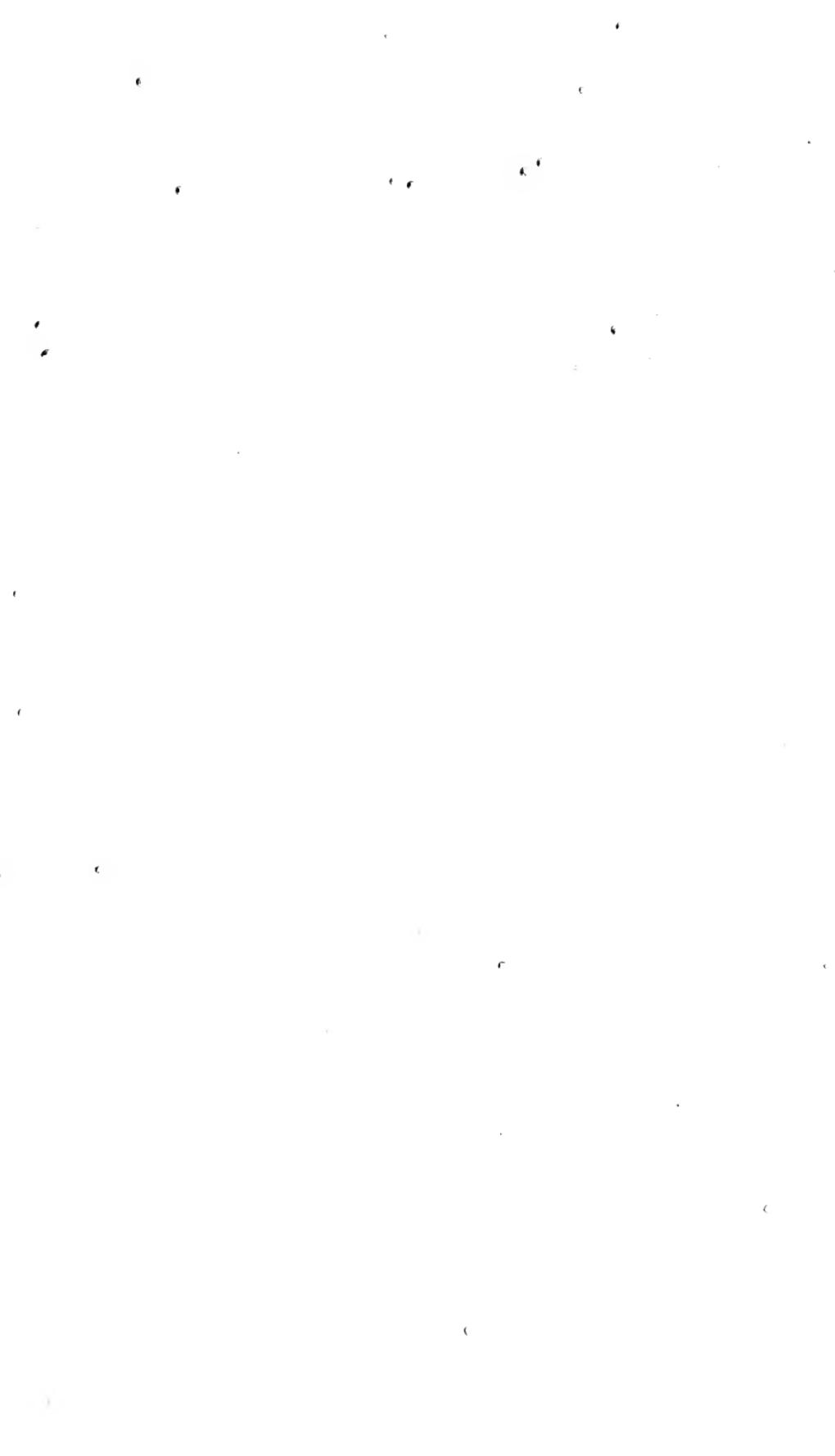
To Mr. C. O. Waterhouse of the British Museum I am still more indebted for his careful revision of the proofs, and his usual valuable and kindly suggestions. Mr. Robert Newstead of the School of Tropical Medicine at Liverpool has placed his types at my disposal, and has given me much information and help generally.

The photographs as before have been taken by Mr. F. Edenden of Wye, and the drawings have been prepared by Miss C. Beard and Mr. H. F. Carter.

FRED. V. THEOBALD.

WYE COURT, WYE.

*March 20, 1910.*



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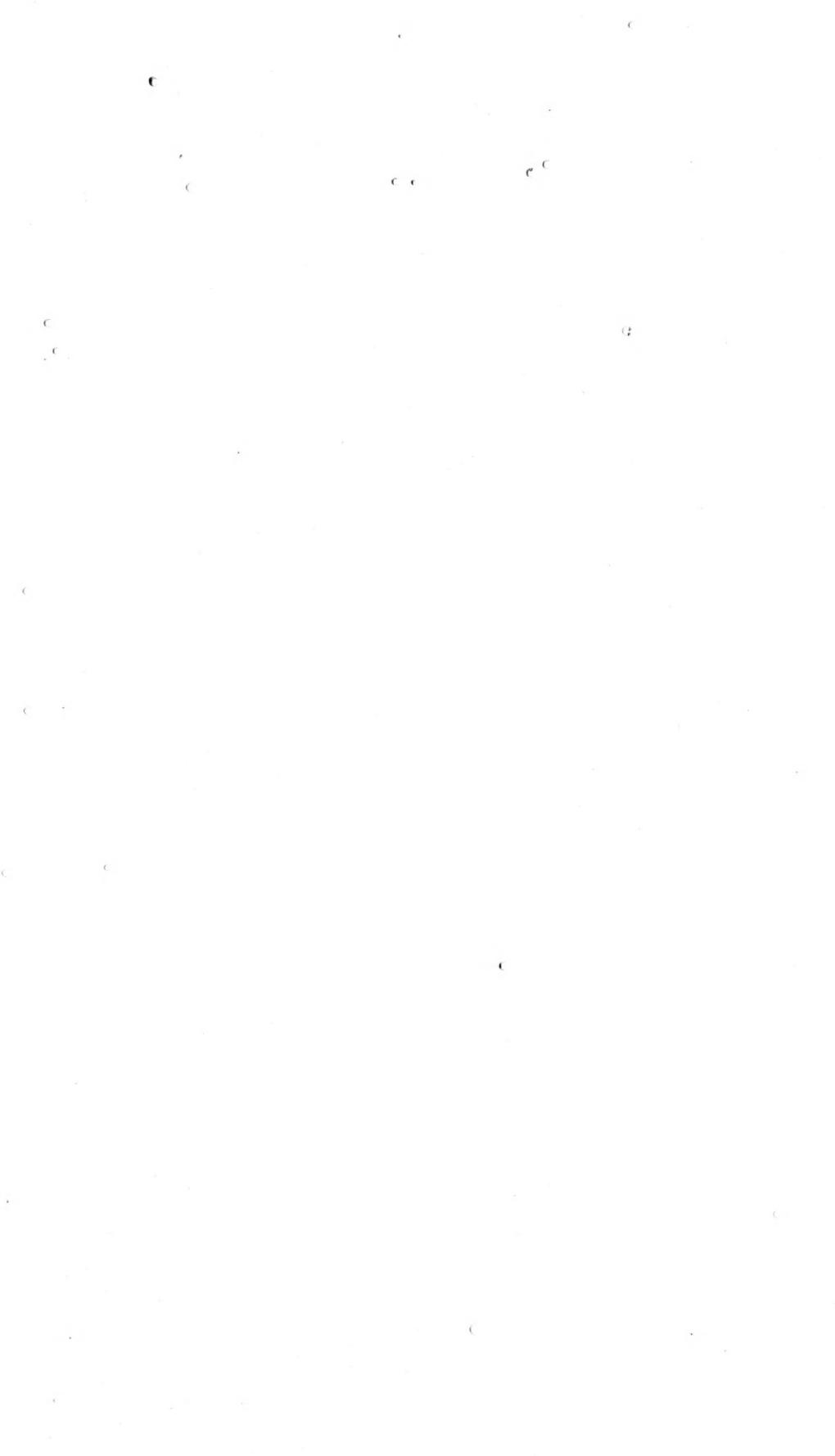
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A MONOGRAPH  
OF THE  
CULICIDAE OF THE WORLD.

SUB-FAMILY ANOPHELINEAE. THEOBALD.

TWENTY-ONE genera occur in this sub-family, and they tabulate as follows :—

TABLE OF GENERA.

- A. First submarginal cell large.
  - I. Antennal segments without dense lateral scale tufts.
    - (a) Thorax and abdomen with hair-like curved scales.
    - a. No flat scales on head, but upright forked ones.
    - b. Basal lobe of ♂ genitalia of one segment.
      - 1. Wing scales rather large, lanceolate .....?..... Genus *ANOPHELES*. Meigen.
      - 2. Wing scales mostly small, narrow or slightly lanceolate; wings prominently spotted along costa  
..... Genus *MYZOMYIA*. Blanchard.
      - 3. Similar but 4th long vein very near base of 3rd; outstanding scales on prothoracic lobes.....  
..... Genus *NEOMYZOMYIA*. nov. gen.
      - 4. Wing with patches of large inflated scales..... Genus *CYCLOLEPPTERON*. Theobald.
      - ββ. Basal lobe of ♂ genitalia of 2 segments.
      - 5. Prothoracic lobes with dense outstanding scales ..... Genus *FELTINELLA*. Theobald.

*A Monograph of Culicidae.*

- aa.* Median area of head with some flat scales; prothoracic lobes mammilated.
6. Wing scales lanceolate.....Genus *STETHOMYIA*. Theobald.
- (b) Thorax with distinct narrow-curved scales; abdomen hairy.
7. Wing scales small, lanceolate; head with normal forked scales  
Genus *PYRETOPHORUS*. Blan-
- chard.
8. Wing scales broad and lanceolate; head with broad scales, not closely appressed but not forked or fimbriated .....Genus *MYZORHYNCHELLA*.  
Theobald.
- (c) Thorax with hair-like curved scales and some narrow-curved ones in front; abdomen with apical lateral scale tufts and scaly venter; no ventral tuft.
9. Wing scales lanceolate.....Genus *ARRIBALZAGA*. Theobald.
- (d) Thorax with hair-like curved scales; no lateral abdominal tufts; distinct apical ventral tuft. Palpi ♀ densely scaly.
10. Wings with dense large lanceolate scales .....Genus *MYZORHYNCHUS*. Blan-
- chard.
- (e) Thorax with hair-like curved scales and some narrow-curved lateral ones; abdomen hairy with dense long hair-like lateral apical scaly tufts.
11. Wing scales, short, lanceolate and dense; fork-cells rather short.....Genus *CHRISTYA*. Theobald.
- (f) Thorax with very long hair-like curved scales; abdomen pilose except last two segments which are scaly. Dense scale tufts on hind femora.
12. Wings with broadish, blunt lanceolate scales .....Genus *LOPHOSCELOMYIA*. Theobald.
- (g) Thorax and abdomen with scales.
13. Thoracic scales narrow-curved to spindle shaped; abdominal scales as lateral tufts and small dorsal patches of flat scales.....  
Genus *NYSSORHYNCHUS*. Blan-
- chard.
14. Abdomen nearly completely

scaly with long irregular scales  
and with lateral scale tufts ...

Genus *CELLIA*. Theobald.

15. Similar to *Cellia* but no lateral  
scale tufts ..... Genus *NEOCELLIA*. Theobald.

16. Abdomen completely scaled with  
large flat scales as in *Culex* ...

Genus *ALDRICHINELLA*. Theobald

" (nov. nom.) ; *ALDRICHIA*.  
Theobald (1901), non  
Coquillett (1894).

17. Thoracic scales hair-like except  
a few narrow-curved ones in  
front; abdominal scales long,  
broad and irregular ..... Genus *KERTESZIA*. Theobald.

18. Thorax with narrow hair-like  
curved scales and some of them  
broad straight scales, others  
spatulate on the sides. Abdo-  
men covered with fine hairs  
except the three last segments  
which are covered with scales.  
Tufts of scales on hind femora.

Wing scales lanceolate... Genus *MANGUINHOSIA*. Cruz.

- II. 19. Antennal segments with many  
dense scaly tufts ..... Genus *CHAGASIA*. Cruz.

- B. 20. Antennae with outstanding  
scales on the 2nd segment,  
more appressed ones on the 1st.  
At least one segment of abdo-  
men with long flat more or less  
spatulate scales ..... Genus *CALVERTINA*. Ludlow.

21. First submarginal cell very  
small ..... Genus *BIRONELLA*. Theobald.

*Note*.—The genus *Coelodiazesis*, Dyar and Knab, is invalid.  
It was founded on *Anopheles barbasi* (a true *Anopheles*, it appears)  
from larval characters only, which of course do not hold good.

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### GENUS **ANOPHELES.** Meigen (1818).

Syst. Beschr. Europ. Zweiflug. Insekten I., 10 (1818), Meigen; Mono.  
Culicid. I., 115 (1901) and III., 17 (1903), Theobald.

Eighteen \* distinct species occur in the genus, and possibly  
some of the new species described in America may be distinct

\* Dyar and Knab named four *Anopheles* in 1906 as new species  
(Proc. Bio. Soc. Wash. XIX., 136 (1906). They are merely names (*vide*  
Appendix).

from *maculipennis*. I have only referred to these, leaving them for the Carnegie "Monograph of American Culicidae."

### SYNOPTIC TABLE OF ANOPHELES.

#### A. Wings spotted.

##### I. Legs unbanded.

- $\alpha$ . Wings with spots formed of collections of scales on the wing field—  
no costal spots ..... *maculipennis*. Meigen.
- $\beta$ . Wings with light and dark costal markings.  
Costa with two yellow spots.  
Large species.  
No fringe spots ..... *punctipennis*. Say.  
Fringe spots present ..... *pseudopunctipennis*. Theobald.  
Costa one spot ..... *perplexens*. Ludlow.  
Small species.
- $\gamma$ . Wings much spotted ..... *franciscanus*. McCracken.

##### II. Legs with basal pale bands.

- Two large dark costal spots ..... *gigas*. Giles.  
Two large and two small basal spots... *formosus*. Ludlow.

##### III. Legs with narrow apical bands.

- Costa dark with two small pale yellow spots ..... *wellcomei*. Theobald.

#### B. Wings unspotted.

##### I. Legs unbanded.

- $\alpha$ . Thorax adorned as in *Corethra*..... *corethroides*. Theobald.
- $\alpha\alpha$ . Thorax with no special ornamentation.
- $\beta$ . Second fork-cell much more than half the length of the first.
- $\gamma$ . Palpi unbanded.
- $\delta$ . Petiole of first fork-cell more than  $\frac{1}{3}$  length of cell.  
Abdomen with golden hairs ... *bifurcatus*. Linnaeus.  
Abdomen with brown hairs ... *algeriensis*. Theobald.

- $\delta\delta$ . Petiole of first fork-cell  $\frac{1}{3}$  length of cell ..... *barberi*. Coquillett.

##### $\gamma\gamma$ . Palpi banded.

- Dark species.  
Wing scales very dense ..... *smithii*. Theobald.  
Wing scales not so dense ..... *nigripes*. Staeger.
- $\beta\beta$ . Second fork-cell not more than half the length of the first ..... *aitkenii*. Theobald.

##### II. Legs banded.

- Hind femora only with broad white band ..... *lindsayi*. Giles.  
Apices of hind tarsi pale ..... *immaculatus*. Theobald.

*ANOPHELES MACULIPENNIS.* Meigen (1818).

*Anopheles bifurcatus.* Meigen (1804). (Non Linné, 1758).

*Anopheles claviger.* Fabricius (1805). (No type).

*Anopheles quadrimaculatus.* Say (1824).\*

*Anopheles annulimanus.* Van der Wulp (1867).

Syst. Beschr. Europ. Zweifl. Ins. I., 11, 2 (1818), Meigen; Mono. Culicid. I., 191 (1901), III., 17 (1903); IV., 26 (1907), Theobald; Journ. Hygi. V., No. 4, 486 (1905), Nuttall.

Widely distributed over Europe; Cyprus; Crete; Corsica; Sardinia; Algeria; Tunis; Palestine; United States and Canada.

*Additional localities.*—Bourgas, 10. vi. 06 (in fishing huts, Bourgas Wells); Karatepe, 28. viii.; Poda, 12. vi.; Voja, 13. viii.; Mugres, 5. xi.; Ludja and Kioi, 8. viii. in Bulgaria.

Nuttall records several more British localities in Lincolnshire, Huntingdonshire, Cambridge, W. Sussex, Cheshire, and Monmouthshire.

*Notes and observations.*—Dyar looks upon Say's *quadrimaculatus* as a distinct species. I have carefully compared American specimens with European and find them similar.

The following interesting record of this species has been made by Richard F. L. Burton, Esq., of Longner Hall, Shrewsbury:—

- Jan. 1, 1906. ♀ Hibernating clock tower, Calfpen.
- Feb. 17, 1909. ♀ Hibernating root shed.
- Feb. 19, 1909. ♀ Biting by study fire; night.
- Feb. 21, 1909. ♀ On windows trying to get out.
- March 3, 1909. ♀ On windows trying to get out.
- March 15, 1907. ♀ Biting in bedroom.
- March 16, 1907. ♀ Biting by study fire; night.
- March 23, 1907. ♀ Biting by study fire; night.
- March 29, 1909. ♀ Biting by study fire; night.
- April 3, 1907. ♀ Biting by study fire; night.
- April 6, 1909. ♀ Biting by library fire; night.
- April 7, 1909. ♀ Biting by library fire; night.
- April 10, 1907. ♀ Biting in dining-room; 10 A.M.

\* Dyar and Knab (Proc. Biol. Soc. Wash. Nov. 06) say: "This species is clearly not introduced from Europe and we think should not be considered the same as *maculipennis* without rigid proof." *A. maculipennis* has been received at the British Museum from Canada, and the specimens I have received from the United States are the same.

April	19, 1909.	♀	Biting in laboratory ; 12 noon.
April	27, 1907.	♀	In sandstone quarry.
May	6, 1907.	♀	Biting in dining-room ; daytime.
June	1, 1908.	♂	Sheltering in pit latrine.
June	5, 1909.	♂	Sheltering in pit latrine.
June	12, 1909.	♂	Swarming over bridge bylet ditch ; sunset.
June	15, 1907.	♀	Biting whilst shearing ; 11.30 A.M.
June	17, 1907.	♂	Sheltering in room of pit latrine.
June	19, 1907.	♂	Swarming by bridge at rookery gate ; sunset.
June	30, 1909.	♂	Swarming by bridge at rookery gate ; sunset.
July	3, 1909.	♂	Sheltering in room of pit latrine.
July	4, 1906.	♂	Swarming by bridge at rookery gate ; sunset.
July	6, 1906.	♂	Swarming by bridge at rookery gate during heavy rain.
July	12, 1909.	♂	Swarming by bridge at rookery gate ; sunset.
July	17, 1906.	♂	In red sandstone quarry.
July	26, 1906.	♂	Swarming by bridge at rookery gate.
July	31, 1909.	♂	Sheltering in room of pit latrine.
Aug.	5, 1909.	♂	Sheltering in room of pit latrine.
Aug.	9, 1908.	♂	Sheltering in bedroom.
Aug.	13, 1908.	♂	Sheltering in room of pit latrine.
Aug.	23, 1908.	♂	Sheltering in room of pit latrine.
Aug.	30, 1906.	♂	Swarming in hydraulic ram house.
Sept.	4, 1908.	♂	Sheltering in room of pit latrine.
Sept.	18, 1906.	♂	Swarming by bridge at rookery gate.
Sept.	21, 1909.	♂	Swarming by bridge at rookery gate.
Sept.	30, 1907.	♂	Sheltering in room of pit latrine.
Oct.	6, 1909.	♂	One at rookery gate by bridge.
Oct.	11, 1908.	♂	Sheltering in room of pit latrine.
Oct.	16, 1907.	♂	Sheltering on gallery wall.
Nov.		♀	Hibernating.
Dec.		♀	Hibernating.

Besides this interesting record (one of a number on British species), Mr. Burton adds the following notes :—

" Have caught a few of these flies infested with a red parasite. The ♂'s swarm in lots of ten to twelve here. These flies are caught a great deal in buildings, because they offer the best and commonest shelter ; but they are to be found just as well in stone quarries if the shelter is good. Their numbers vary a great deal from year to year."

The type of *annulimanus* is in the Leyden Museum.

*ANOPHELES PUNCTIPENNIS.* Say (1823).

*Culex hyemalis.* Fitch (1851).

Journ. Acad. Nat. Sc. Philad. III. (1823), Say; Mono. Culicid. I., 189 (1901) and IV., 27 (1907), Theobald.

North America.

*ANOPHELES PSEUDOPUNCTIPENNIS.* Theobald (1901).

Mono. Culicid. II., 305 (1901), Theobald.

Grenada and Mexico.

Type in the British Museum.

*ANOPHELES PERPLEXENS.* Ludlow (1907).

Canad. Entomo. XXXIX., p. 267, 1907.

"♀. Head dark, with dark brown and white fork scales, the latter nearer the vertex, and a heavy tuft of slender, long curved white scales projecting cephalad between the eyes; antennae dark brown, verticels and pubescence dark, basal joint brown; palpi dark, covered with dark brown scales, a small tuft of white hairs at the very tip; proboscis dark with brown scales, tip testaceous; clypeus dark, eyes brown.

Thorax: prothoracic lobes testaceous, with dark hairs; mesonotum with broad, light median stripe, covered with white 'frost,' and white hairs arranged so as to suggest a 'part,' a dark median line extending half way to the scutellum, and two dark lateral bordering lines; more or less of a tuft of these hairs at the nape; laterad the dorsum is dark brown, with dark brown hairs; pleura brown; scutellum testaceous, 'frosty,' with brown bristles; metanotum dark brown.

Abdomen dark brown, with light hairs (no scales).

Legs, coxae and trochanters light, mostly light scaled; femora ventrally light scaled, and extreme tips of femora and tibiae ochraceous, remainder of legs dark brown; unguis simple.

Wings clear, and rather heavily clothed with dark brown scales, except a few small ochraceous spots—one on the costa, just interior to a line drawn through the junction of the branches of the fork cells, a second tiny spot at the junction of the first long vein with the costa, extending a tiny bit on the long vein, and two very small faint light spots on the forks of the fourth

long vein, also a tiny fringe spot at the distal end of the third long vein; halteres with light stems and fuscous knobs.

*Length.*—2 to 5·3 mm.

*Habitat.*—Camp Roosevelt, Mt. Gretna, Pa. Taken August 25th, 1906.

This interesting species was sent by Capt. E. B. Whitemore, Asst.-Surg., U.S. Army, and, as will be seen from the description, bears a closer resemblance to tropical *Anophelina* than to those so far reported from the U.S., but as the group it most closely resembles has abdominal scales and rather broader wing-scales it cannot be referred to it."

The above is Miss Ludlow's original description. From the specimen shown me it seems to be a typical *Anopheles*.

#### *ANOPHELES FRANCISCANUS.* McCracken (1904).

Ent. News, XV., 12 (1904), McCracken; Mono. Culicid. IV., 31 (1907), Theobald.

California and Texas, U.S.A., etc.

#### *ANOPHELES GIGAS.* Giles (1901).

*Myzomyia gigas.* Giles—Blanchard (1905).

Ent. Mo. Mag. XXXVII., 196 (1901), Giles; Mono. Culicid. II., 308 (1901), Theobald; ibid. IV., 31 (1907), Theobald.

Conoor, Nilgiri Hills; Deesa in India and in Ceylon.

*Types* in the British Museum.

#### *ANOPHELES FORMOSUS.* Ludlow (1909).

Canadian Entomologist, XLI., p. 22, Jan. (1909); Mosq. Philip. Isl. 10 (1908), Ludlow.

"♀. Head brown, with light yellow or white long slender curved scales on the vertex, and projecting forward in a tuft between the eyes, white forked scales on the occiput, and brown forked scales laterad and ventrad; antennae dark brown, verticels and pubescence brown, basal joint testaceous; palpi brown, rather heavily scaled, the tip light, and bases of penultimate and antepenultimate joints narrowly light-banded, proboscis dark brown, the labellae slightly lighter; clypeus brown; eyes dark rich brown.

Thorax beautifully marked; prothoracic lobes dark brown, with dark brown flat scales; mesonotum has the median part a

light soft fawn colour, covered with light yellow or whitish curved hair-like scales extending from the nape to the scutellum, except a small brown median spot just cephalad of the scutellum, and connecting with the dark median line; this median part is bordered with a more or less distinct white line, broadening toward the scutellum; there are also broad submedian yellowish stripes extending from the nape about half the length of the mesonotum; laterad the mesonotum is dark rich brown; scutellum light, continuing the colouring and scales of the medio-mesonotum; pleura rather greyish, with dark and white bands; metanotum rich yellowish-brown.

Abdomen greyish-brown, covered with long light yellow hairs.

Legs, coxae and trochanters light, with a little brown; the very bases of the femora light, otherwise the legs are a rich brown, with yellowish knee-spots and narrow yellowish bands at the bases of most of the tarsal joints, generally slightly including the apices of the preceding joint. These bands are on all the tarsal joints of the hind legs, and lacking on the fourth and fifth joints on the fore and mid legs; ungues simple and equal.

Wings yellowish, with brown spots; two small brown spots on the costa near the base, and two large ones, the proximal including the sub-costa and first longitudinal practically as much as the costa, with a small extension on the root of the second long vein, and a still smaller one just under the distal end of the large spot; the distal large spot begins just exterior to the junction of the sub-costa with the costa, and ending a little interior to the junction of the first long vein with the costa, and extends on to the first long and upper fork of the second long vein, with small spots on the lower fork; the distal end of the lower fork of the second, of the third, of both forks of the fourth and of the fifth, have heavy dark spots; wing-field somewhat spotted; fringe is dark except at the junction of the first long and costa, where it is yellow, and a pale spot midway between the forks of vein 5; cells long, the first submarginal as long as its stem, and a little longer and narrower than the second posterior-cell; supernumerary and mid cross-veins meet, and are about equal in length, posterior cross-vein about as long as the mid, and more than its own length distant.

Halteres have light bases, with heavy dark knob.

*Length*.—10 mm. (proboscis 3·5 mm.).

*Habitat*.—Camp John Hay, Benguet, P. I.

Taken March 20, 1908.

This large and beautifully marked *Anopheles* is the first of this genus to be received from the P. I., and shows the characteristic habitat of *Anopheles* in the tropics, coming from the high mountain regions of Benguet."

The presence of flat scales on the prothoracic lobes is very unusual and may possibly mean the exclusion of this species from *Anopheles*. I have been unable to see the species.—F. V. T.

**ANOPHELES WELLCOMEI.** Theobald (1904).

First Rep. Gordon Coll. Well. Labs., p. 64 (1904), Theobald; Mono. Culicid. IV., 33 (1907), Theobald.

Sudan. Aden Hinterland (?).

*Note*.—Captain Patton, I.M.S., says this species does not occur in the Aden Hinterland, and that the insect he sent me was not this species. I could not detect any difference from *Wellcomei*, but the specimen was badly damaged and set.

*Type* in the British Museum.

**ANOPHELES CORETHROIDES.** Theobald (1907).

Mono. Culicid. IV., p. 35 (1907), Theobald; Ann. Queensl. Mus., No. 8, p. 11 (1908), Bancroft.

South Queensland.

Regarding this species Dr. Bancroft says: "This is a small mosquito and extremely uncommon. I bred it out from a mixed lot of larvae obtained from a small well or water hole, four feet square, made in a gully in the Bupengary scrub, near the railway station; this hole was dug out with a spade until water soaked naturally into it; several rare mosquitoes were obtained from this water hole. After some months, predaceous insects such as Dragon-fly larvae, *Notonecta*, *Belostoma*, etc., make their appearance in such a mosquito well, and if one wishes to encourage mosquitoes to breed in it, it is necessary to clean it out occasionally."

I have also bred it out from mixed larvae obtained from the Kedron Brook, in the vicinity of Alderley.

It is not yet known if the female bites."

*Type* in the British Museum.

## ANOPHELES BIFURCATUS. Linnaeus (1758).

*Culex bifurcatus.* Linnaeus (1758).*Culex trifurcatus.* Fabricius (1794).*Culex claviger.* Meigen (1804).*Anopheles villosus.* Robineau Desvoidy (1828).*Anopheles walkeri.* Theobald (1901).

Syst. Nat., ed. x., 603, 2 (1758); Mono. Culicid. I., 195, 199 (1901), III., 19 (1903), IV., 36 (1907), Theobald.

England, Wales, Scotland; France; Hungary; Italy; Denmark; Russia; Holland; Germany; Austria; Norway, etc.; Canada and United States.

*Notes and observations.*—The following interesting observations have been sent by Mr. Burton from Shrewsbury:—

- April 21, 1907. ♂ In sandstone quarry; 5.30 P.M.
- April 23, 1909. ♂ In sandstone quarry; 5.30 P.M.
- April 27, 1909. ♀ Biting in sandstone quarry; 6.30 P.M.
- May 3, 1909. ♂ Swarming in quarry woods; 6.15 P.M.
- May 6, 1908. ♂ Swarming in sandstone quarry; 6.45 P.M.
- May 11, 1906. ♂ Swarming in sandstone quarry.
- May 11, 1909. ♂ Swarming in most of the woods.
- May 18, 1909. ♂ Swarming.
- May 24, 1909. ♀ With larval Trombidium.
- May 28, 1909. ♂ In sandstone quarry.
- June 4, 1909. ♂ Swarming in rookery.
- June 16, 1909. ♂ Swarming in sandstone quarry.
- June 19, 1907. ♂ Swarming by watercress pit.
- June 27, 1909. ♂ Swarming in most of the woods.
- June 30, 1909. ♂ Swarming in most of the woods.
- July 5, 1909. ♂ Swarming high up in fields by woods.
- July 12, 1906. ♂ Swarming end of sandy lane.
- July 21, 1908. ♂ Swarming.
- July 26, 1906. ♂ Swarming by watercress pit.
- Sept. 8, 1909. ♂ Swarming end of sandy lane; 6.30 P.M.
- Sept. 14, 1909. ♂ Swarming over starch house field.
- Sept. 13, 1909. ♂ Swarming high up over bylet ditch.
- Sept. 21, 1909. ♂ Swarming.
- Sept. 26, 1909. ♂ Swarming by watercress pit.
- Sept. 29, 1909. ♂ Swarming high up over bylet ditch.
- Oct. 2, 1909. ♂ Swarming in withy bed.

- Oct. 6, 1909. ♂ Swarming in withy bed; 5.30 p.m.  
 Oct. 18, 1909. ♂ Swarming in withy bed.  
 Oct. 20, 1909. ♂ Swarming in withy bed.  
 Oct. 21, 1906. ♂ Swarming by watercress pit.

This fly gets badly infested with red parasite in July. The absence of notes in August was only due to the fact of my wasps nesting during this month. This fly does not seem to vary from year to year; there are always lots. Have never had more than four biting at one time. ♂'s swarm in lots up to twenty-five.

*Type of walkeri* in the British Museum.

**ANOPHELES ALGERIENSIS.** Theobald (1903).

Ann. Inst. Pasteur. XVII., 2 (1903), Theobald; Mono. Culicid. III., 21 (1903), Theobald.

Algeria.

*Type* in the British Museum.

**ANOPHELES BARBERI.** Coquillett (1903).

*Coelodiazesis barberi.* Coquillett—Dyar (1906).

Canad. Entomo. XXXV., p. 310 (1903), Coquillett; Mono. Culicid. IV., p. 37 (1907), Theobald; Journ. N.Y. Ent. Soc. XIV., 4, 177 (1906), Dyar and Knab.

Maryland, U.S.A.

*Notes.*—This reads very like a variety of *A. bifurcatus*, but it is distinct. Dyar makes it a new genus on purely larval characters.

The larvae live in the water of hollow trees. I have recently found this with *bifurcatus* in England.

**ANOPHELES SMITHII.** Theobald (1905).

The Entomologist, XXXVIII., p. 101 (1905), Theobald; Mono. Culicid. IV., p. 38 (1907), Theobald.

Sierra Leone (800 feet) (Major F. Smith, R.A.M.C.).

*Type* in the British Museum.

**ANOPHELES NIGRIPES.** Staeger (1839).

*Anopheles plumbeus.* Haliday (1828)?

Natur. hist. Tidsskr. II., 252, 3 (1839), Staeger; Mono. Culicid. IV., 40 (1907), Theobald.

Penzance; Beddgelert, N. Wales; Denmark; Hungary; United States.

*Additional localities.*—Aberdeen Woods, Fife and Edinburgh, N.B.; Manchester, Shrewsbury and Hereford, in England.

*Notes.*—The following interesting notes have been sent by Mr. Burton from Shrewsbury :—

- “ May 30, 1908. ♀ Above quarry in wood.
- June 1, 1908. ♂ Sheltering in room of pit latrine.
- June 2, 1908. ♂ Swarming near oak tree in hay-field.
- June 3, 1908. ♂ ♀ Sheltering in moat wood latrine.
- June 12, 1908. ♀ Rookery. ♀ Old garden.
- June 12, 1909. ♂ Swarming by rookery gate.
- June 16, 1908. ♂ Swarming in hay-field.
- June 22, 1908. ♂ Swarming rookery and barn-field.
- June 29, 1906. ♀ Moat wood. ♀ Quarry.
- July 3, 1908. ♀ Moat wood.
- July 7, 1906. ♂ Sheltering in room of latrine.
- July 20, 1906. ♀ Quarry.
- July 21, 1906. ♂ Moat wood plantation sheltering in yew tree.
- July 28, 1906. ♂ Moat wood.
- July 29, 1906. ♂ Box-bush old garden.
- Aug. 1, 1906. ♂ Play-house roof, sheltering.
- Aug. 27, 1909. ♂ End of sandy lane, 7.0 P.M.
- Aug. 30, 1909. ♀ Biting in withy-bed.
- Sept. 15, 1907. ♀ Moat wood plantation.
- Sept. 16, 1907. ♀ Biting in dining-room ; biting by moat.
- Sept. 18, 1907. ♀ Biting in quarry.
- Sept. 22, 1907. ♀ Biting in Raven's-nest wood, 3.30 P.M.
- Sept. 24, 1907. ♂ Rookery.
- Sept. 26, 1907. ♀ In Raven's-nest wood, biting.
- Oct. 1, 1908. ♀ Sheltering in study-window.

Have never seen more than two trying to bite at the same time. ♂ swarm in lots of four or five.”

Mr. W. Evans of Edinburgh writes me he has bred the ♂'s of this species. The larvae were taken in a pool near Lasswade, a few miles south of Edinburgh. They pupated October 15th and the fly emerged on October 22nd. Mr. Evans took 4 ♀'s in Fife on July 2nd, 1909.

#### *ANOPHELES AITKENII.* Theobald-James (1903).

Mono. Culicid. III., 22 (1903), Theobald; Rec. Ind. Mus. II., pt. III., no. 30, 287 (1908), Theobald.

Goa Frontier and Karwar.

*Additional localities.*—Mèenglas, Dooars, Jalpaiguri (C. Wal-

lich) 9. viii. 1907. ♂ and ♀ in Indian Museum, Calcutta; 1 ♀ same locality 3. vii. 1907 (C. a. Wallich) in British Museum.

**ANOPHELES LINDESAI.** Giles (1900).\*

Handbook Gnats, p. 166 (1900), Giles; Mono. Culicid. I., 203 (1901); IV., 40 (1907), Theobald.

Punjab; Reneghat, Bengal; Dehra Dhun.

*Additional locality.*—Ferozepore District, Punjab, 1 ♀ (Major Adie).

*Type* in the British Museum.

var. *maculata*. nov. var.

A very distinct variety of this marked species. The wings have a dense black spot of scales at the base of the second long vein, a dense black spot of scales at the cross veins, another at the base of the first fork-cell, a smaller one at the base of the second fork-cell and the outer edge of the costa, the first long vein and the base of the branches of the first fork-cell all very dark. There are no pale spots on the wing fringe.

*Habitat.*—Kurseong, 5,000 feet, Darjiling district, E. Himalayas.

*Time of capture.*—5. vii. 08 (Annandale).

*Observations.*—A single perfect ♀. Evidently only a variety of Giles' species, but the marked maculation of the wings gives it a very different appearance.

*Type* in the Indian Museum, Calcutta.

**ANOPHELES IMMACULATUS.** James (1902).

Malaria in India, p. 45 (1902), James; Mono. Culicid. III., p. 23 (1903), Theobald and IV., p. 40 (1907).

Ennur, near Madras.

**ANOPHELES EISENI.** Coquillett (1902).

Journ. New York Ent. Soc. X., p. 192 (1902), Coquillett; Mono. Culicid. IV., p. 38 (1907), Theobald.

Aguna, Guatemala, 2,000 ft. (Coquillett).

\* The spelling of *Lindesayi* seems to be confused; Giles described it as *Lindesaii* (1900). The writer mentioned it as *Lindesayii* (1901); Blanchard, whose terminology I have adopted, calls it *Lindesayi*.

## ANOPHELES CRUCIANS. Wiedemann (1828).

Auss. Zweiflög. Ins., p. 12 (1828), Wiedemann; Mono. Culicid. I., p. 204, 35 (1901), Theobald; *ibid.* IV., p. 29 (1907), Theobald.

North America. I have not seen this species and cannot place it in any genus; but Miss Ludlow assured me it is an *Anopheles*. Miss Ludlow sent me the following note:—

“A curious little error has crept into the description of this mosquito, and has been carried into so many authors that it seems as if the easiest way would be for the insect to rearrange its markings.

Wiedemann, in his description (Ausse Europ. Zweiflög. Ins. p. 12, 1828), says: ‘Taster braunlich schwartz, Glieder an der Wurzel wenig schneeweiss’; but this is, of course, a broad generalization, and the words are used loosely.

Coquillett (Circ. 40, 2nd series, Dept. Agric. p. 4, 1899), makes the statement more definite: ‘palpi marked with white at the bases of last four joints.’

Theobald, quoting this, makes it part of his description. (Mon. Cul. of the World, Vol. I., p. 294, 1901.)

Blanchard (Les Moustiques, Hist. Nat. et Med. p. 171, 1905), apparently using the same information says: ‘Palpes d’un noir brunâtre, marques de blanc à la base des 4 derniers articles.’

Felt. (Mos. or Col. of N.Y. State, N.Y. State Museum, p. 270, 1904) also carries on the error, giving as one of the distinctive characteristics, ‘the white bases of the last four segments of the palpi.’

Smith, in his synoptical Table (Report on Mosquitoes, N.J. Agri. Expt. Sta. p. 152, 1904), makes the ‘palpi white-marked at base of joints,’ but figures and describes the palpi correctly (*id.* p. 170).

Coquillett, in his last work on the subject (a Classification of the Mosquitoes of North and Middle America, p. 12, 1906), drops this characteristic, but does not correct his former error.

In reality, the specimens sent in to this office, for more than a year, from various parts of the U.S., and those in the collection of the National Museum show the last joint of the palpi entirely white (silvery-grey), and very narrow white bands at the bases of the penultimate and antepenultimate joints, the remainder of the palpi being entirely brown. The only variation on this is

that in some rubbed specimens the base of the ultimate joint appears brownish, but the perfect specimens show the entire distal joint and two bands white."

### GENUS MYZOMYIA. BLANCHARD (1902).

GRASSIA. Theobald. Journ. Trop. Med., II., p. 181 (1902).

MYZOMYIA. nov. nom. Blanchard. C. 2. Soc. Biol. Paris, XXIII., p. 795 (1902).

### SYNOPTIC TABLE OF SPECIES.

#### A. Proboscis unbanded.

##### 1. Legs banded.

###### a. Palpi with 3 white rings.

Legs with faint apical pale bands.

Wing fringe spotted..... *funesta*. Giles.

Legs with prominent apical pale bands

and a broad pale median band to  
fore and mid metatarsi..... *lutzii*. Theobald.

Legs (hind) with apical and basal pale  
bands.

Wings with 5 or 6 dark costal spots,  
the largest T-shaped ..... *rossii*. Giles.

Wings with 4 yellow costal spots ... *longipalpis*. Theobald.

###### b. Palpi with 2 white rings.

Apex white..... *aconita*. Dönnitz.

Apex black ..... *d'thali*. Patton.

γ. Palpi with 4 white rings..... *jehafii*. Patton.

##### 2. Legs spotted and banded.

###### a. Supernumerary cross-vein straight.

Palpi with 3 white bands.

Apical and basal pale leg banding.

3rd large costal spot with 2 spots

beneath on 1st long vein..... *ludlowii*. Theobald.

Similar but much smaller ..... *mangyana*. Banks.

3rd costal spot T-shaped as in  
*rossii* ..... *indefinata*. Ludlow.

β. Supernumerary cross-vein markedly  
curved..... *pyretophoroides*. Theobald.

##### 3. Legs unbanded.

###### a. Apex of palpi white and ringed.

3 pale palpal bands.

3rd long vein mostly yellow ..... *listoni*. Liston.

3rd long vein dark.

Several fringe spots ..... *leptomeres*. Theobald.

Two fringe spots ..... *culicifacies*. Giles.

No fringe spots ..... *rhodesiensis*. Theobald.

$\beta$ . Apex of palpi only white ..... *nili*. Theobald.

$\gamma$ . Apex of palpi black.

Black apex narrow ..... *turkhudi*. Liston.

Black apex broad ..... *hispaniola*. Theobald.

4. Legs with spots only at joints.

Palpi with 3 bands, apex black ..... *azriki*. Patton.

B. Proboscis banded.

Legs unspotted ..... *albirostris*. Theobald.

Legs spotted ..... *thorntonii*. Ludlow.

#### MYZOMYIA FUNESTA. Giles (1900).

*Anopheles funesta*. Giles (1900).

*Anopheles kumasii*. Chalmers (1900).

Mem. Liv. Sch. Trop. Med. Mem. 2, p. 50 (1900), Giles; Mono. Culicid. I., 178 (1901), III., 34 (1903), and IV., 46 (1907), Theobald; Ann. Trop. Med. and Parasit. I., No. 1 (1907), Newstead.

Zomba; Sudan; Uganda; Nile Provinces; Tanganika Plateau; Lagos; Gambia; Congo and Zambesi Watersheds and up Zambesi as far as Lupata Gorge; Senegal; Natal; Sierra Leone; Ashanti; Mashonaland; British Central Africa up to 5000 ft.

*Additional localities*.—Transvaal (Simpson); Pampanga, Camp Stotsenberg, Angeles, P.I. (Whitmore); Zambie, Princes Island, Matadi, Wathen, Kalombe, Lusambo, in Congo Free State (Newstead).

*Economic importance*.—Malarial parasites seen to develop in these insects at Lusambo, Congo Free State, and elsewhere.

*Type* in the British Museum.

#### MYZOMYIA FUNESTA. Giles (1900).

var. *umbrosa*. Theobald (1903).

Mono. Culicid. III., 34 (1903).

Gambia.

*Type* in the British Museum.

#### MYZOMYIA FUNESTA. Giles.

var. *subumbrosa*. Theobald (1903).

Mono. Culicid. III., 34 (1903).

Gambia.

*Additional localities.*—Six specimens taken from Bor to Mongalla, Sudan (Harold King), 1909.

*Type* in the British Museum.

**MYZOMYIA LUTZII.** Theobald (1901).

Mono. Culicid. I., p. 177 (1901), Theobald: Os Culicideos do Brazil, 78 (1908), Peryassu.

Brazil; British Guiana.

*Type* in the British Museum.

The larva and pupa are figured in Peryassu's work and are reproduced here.

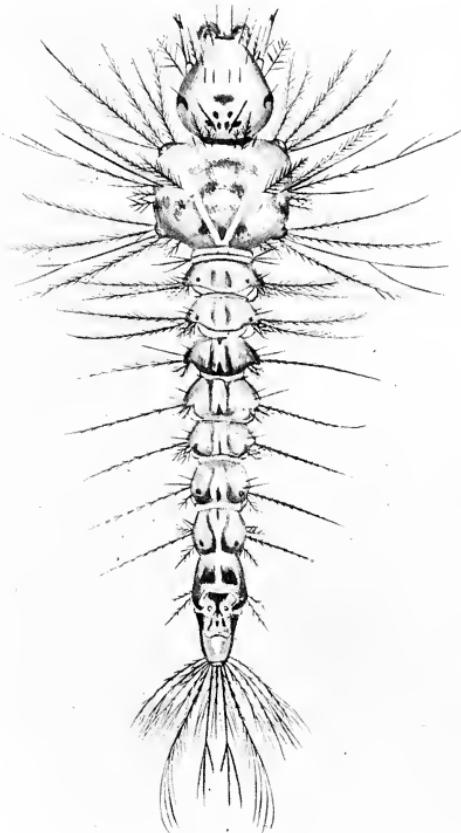


Fig. 1.

Larva of *Myzomyia lutzii*. Theobald. (2nd stage, after Peryassu).

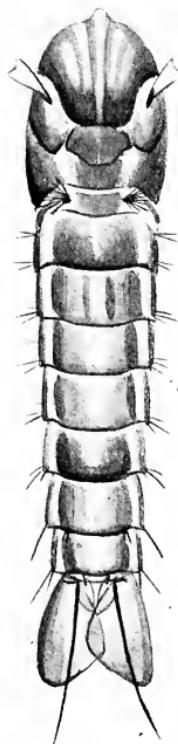


Fig. 2.

Pupa of *Myzomyia lutzii* (after Peryassu).

*MYZOMYIA ROSSI*. Giles (1899).

*Anopheles rossii*. Giles (1899).

*Anopheles vagus*. Dönitz (1903).

Journ. Trop. Med. Oct. 1899, Giles; Handbk. Gnats, 149 (1900), and 2nd ed., 311 (1902), Giles; Mono. Culicid. I., 154 (1901); III. 45 (1903), and IV., 47 (1907); Theobald; Les Moustiq., 178 (1905), Blanchard; Ind. Med. Gaz. XXXVI., 364 (1901), Liston; Zeitschrift f. Hygiene XLI., 80 and 86 (1903), and XLIII., 124 (1903) (*vagus*), Donitz; Mono. Culicid. IV., 47 (1907), Theobald.

Common in India, Ceylon; Straits Settlements; Sumatra; East Indies generally; Philippine Islands; Siam.

*Additional localities*.—Phrapatoo, Siam, 18. 20. 29. i. 07; 19. 29. iii. 07; viii. ix. 06 (Dr. P. G. Woolley); Ferozepore district, Punjab (Major Adie), 418 ♀'s, 92 ♂'s; Trincomalie, Ceylon, 3 ♀'s, 2 ♂'s, "amongst curtains," 14. 28. i. 07; 1. ii. 07; 1. x. 07 (E. Green); Balighai, nr. Puri, Orissa, 26. x. 08 (Annandale); Calcutta, "in house," 11. viii. 08, "in house" (2); 28. vii. 08 (H. Burkhill); 10. viii. 08 (R. F. Lloyd); also common in leather hoods of conveyances; common in public galleries of the Indian Museum; Ferozepore, Punjab, iv. vii. 08 (34) (Lt.-Col. Adie); Shencottah, Madras Frontier, E. side W. Ghats, Travancore, 25. xi. 08 (3) (Annandale); Trivandrum, Travancore, 13. xi. 08 (Annandale); Port Canning, L. Bengal, 9. x. 08 (2); Katihar, Purneah Dist., N. Bengal, 4-5. x. 08 (2) (E. Paiva); Bamungachi, Howrah, nr. Calcutta, 9. ix. 08 and 2. ix. 08 (3) (I. C.); Balighai, nr. Puri, Orissa, 25. and 26. x. 08 (2), "biting by day in wells"; Vaikam, Travancore, Coastal Region, 5. xi. 08 (Annandale); Gopkuda Island, Lake Chilka, Ganges district, 7-15. viii. 07; Ballyganj, Calcutta, 9. x. 08 (2) (T. Bentham); Purneah, N. Bengal, 6. viii. 07 (C. Paiva); Kulattupuzha, W. base of W. Ghats, Travancore, 19. xi. 08 (Annandale); Chittagong, E. Bengal, 19. ix. 08; 21. ix. 08; 5. and 7. viii. 08 (Lt.-Col. Hall); on board ship ten miles off Coconada, Madras Coast, 17. iv. 08 (C. Paiva).

*Note*.—One specimen from Calcutta, quite typical with label determined by Giles as *Anopheles costalis*; he does not mention this in his Handbook.

Type in the British Museum.

**MYZOMYIA LONGIPALPIS.** Theobald (1903).

Mono. Culicid. III., 37 (1903).

British Central Africa.

*Type* in the British Museum.

**MYZOMYIA ACONITA.** Dönitz (1902).

*Anopheles aconita.* Dönitz (1902).

Beitr., z.d. Anopheles, p. 70 (1902), Dönitz; Mono. Culicid. III., 30 (1903), Theobald.

Sumatra, Java.\*

**MYZOMYIA D'THALI.** Patton (1905).

*Anopheles (Myzomyia) d'thali.* Patton (1905).

Journ. Bombay Nat. Hist. Soc., Nov. 2, 627, 1905.

" Palpi (of ♀) with two white bands; thorax light brown covered with curved scales. Abdomen greenish with darker patches in parts. Legs brown with yellowish bands at the joints.

♀. Head light brown with many long light brown upright forked scales; clypeus grey, antennae light brown with light and dark hairs. Palpi lightly scaled with two white bands, one at the junction of the middle with the upper third, and the second at the junction of the middle and lower third. The apex is dark.

Thorax yellowish-brown covered with pale curved hairs and scales. The sides of the mesothorax are greenish in some lights; scutellum is brown with a few curved scales.

Abdomen greenish with darker patches, is covered with light brown hairs.

Legs are brown with faint yellow bands at all the joints.

Wing, the costa has four black spots, the basal spot being the longest; the sub-costal has one black spot near its termination. The first long vein has four black spots corresponding to the four on costa. The remainder of the wing field is pale; the wing fringe is dark. There are no pale patches.

\* Tsuzuki's *Anopheles formosaensis* (Archiv. für. Schiffs- und Tropen-Hygiene VI., 287 [1902]), from N. Formosa, is said by Dönitz (Zeitschrift für Hygiene XLIII., 233 [1903]) to be only a variety of his *aconita* and he names the variety *cohaesa*. It transmits malaria.

♂ is much paler than the ♀, the upright forked scales on head are more prominent. The palpi are exceedingly pale, there are practically no bands; thorax and abdomen same as in female. Legs brown with yellow areas at the joints; fore unguis unequal and uniserrated.

The wing has the same markings as in the female.

*Genitalia*.—Basal segment medium-sized covered with light brown hairs, apical segment narrow, much curved and terminating in a point.

*Habitat*.—D'thala, Hardeba, Sulek, Nobat, Aden Hinterland, (Patton).

*Time of capture*.—October to April at Hardeba; January at Sulek.

*Life-history*.—Found by Patton breeding in springs and in a well, and was found in tents at Nobat.

The larva has a brown head, dark thorax, body almost black with some light mottling. Frontal hairs simple and unbranched.



Fig. 3.

*Myzomyia d'thali*. Patton.

Palmate hair (after Patton).

Antennae have a spine on the outer border about midway. Cephalic ornamentation same as in *Anopheles tibani*. Palmate hairs extend from first to seventh segment inclusive with modified hairs on the thorax. The blade is long with no definite shoulders, and is serrated more on one side than on the other. The filament is as long as the blade.

The egg is boat-shaped with a narrow striated frill; it is encroached upon by the floats, which are well marked, almost meeting in the middle line."

Patton found this mosquito biting freely, and was sure it was carrying the malarial parasite, but it was not definitely settled.

A badly damaged specimen was sent me by Patton with scales eroded; it appeared to come near *Myzomyia nili*, Theobald, but was clearly distinct, owing to the apex of the ♀ palpi being

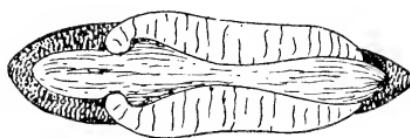


Fig. 4.

Ovum of *Myzomyia d'thali*. Patton  
(after Patton).

black. It probably comes in *Myzomyia*, but is certainly not an *Anopheles*.

*MYZOMYIA JEHAFI.* Patton (1905).

*Anopheles (Myzomyia) jehafi.* Patton (1905).

Journ. Bombay Nat. Hist. Soc., Nov. 2, 630, 1905.

"Palpi, dark with four bands, thorax brown with many curved hair-like scales; abdomen dark brown, legs brown, pale at all the joints.

♀. Head dark, occiput and nape covered with broad upright forked scales, on each side of vertex, there are a group of silvery upright forked scales and scattered all over, there are

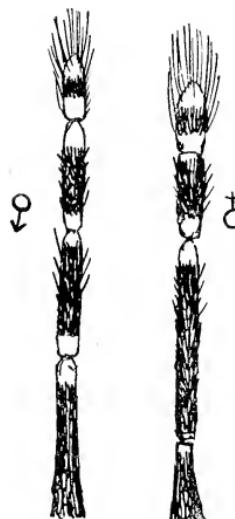
many narrow-curved scales. There is a tuft of dark bristles spreading over the clypeus on each side. Antennae dark, clypeus black. Palpi are densely scaled with four white bands, basal band narrowest, central the broadest, the other two are small. The apical band is often very small.

Thorax dark brown, and when denuded of its scales there are three dark lines, one central and two lateral. It is covered with brown curved scales and many bristles. Prothoracic lobes are dark with bristles and narrow-curved scales. Scutellum has a row of black bristles on upper surface with a few light curved scales scattered about. Metanotum dark with a black line down the centre. Abdomen in brown with some light patches, there are no scales, but many long dark bristles.

Fig. 5.  
Male and female palpi of  
*Myzomyia jehafi*. Patton  
(after Patton.)

Legs are brown with pale area at all the joints. Fore legs, the femur are lightly scaled at upper end, the remaining segments are densely scaled.

Wing: costa has six black spots and three sub-costal. The 1st long vein has five spots, sometimes the small central spot is absent. The 2nd vein has three spots on the main stem, two on the upper and two on the lower branch. The 3rd vein has three, sometimes two spots. The 4th has two long black spots on the stem, two on the upper and one on the lower branch. The 5th vein has one spot on its main stem, three on the upper



and two on the lower branch. The 6th vein has three black spots. The wing fringe is dark with pale areas at the termination of all the veins except the 6th.

$\delta$ . The cephalic ornamentation as in the female; antennae dark and plumose. Palpi have four white bands as in the ♀; the basal band is sometimes absent.

Thorax lighter brown but has the same scale ornamentation as in the ♀. Legs are marked the same as in the female. Abdomen light brown and is covered with light brown hairs. The wing has the same markings as in the ♀.

*Habitat*.—D'thala, Jehaf, Hardeba, Sulek, Aden Hinterland (Patton).

*Time of capture*.—December and January at Hardeba, January, Sulek."

*Life-history*.—Patton says the larva is a large one, but does not give any measurement. The head is black and much ornamented. Thorax dark brown, abdomen greenish, fading away to a light brown. Antennae have no spine on the outer side. Frontal hairs are single and unbranched. Palmate hairs present on the third to seventh segments, inclusive with modified hairs on the second segment. Blade long and almost black with light patches at sides, shoulder on both sides has many serrations, the filament is long and pointed.

*Egg*.—·52 mm. in length and ·15 mm. There is no distinct upper surface (!), no floats and no frill. The only resemblance it has to an *Anopheline* egg is that it is boat-shaped. Each egg is covered with a thin pellicle, which easily breaks off. The eggs were found in a spring near D'thala, when the larvae of this mosquito were breeding. They were found on green matter and were all in a little heap.

If these eggs are correctly placed they differ from all others of this section.

*Observations*.—Some damaged specimens were sent me by Patton, and from them I could only say that they bore so close a resemblance to *P. cinereus* that I could not separate them.

#### MYZOMYIA LUDLOWII. Theobald (1903).

Mono. Culicid. III., 42 (1903).

Philippine Islands; Singapore, and Malay States.

Type in the British Museum.



Fig. 6.  
*Myzomyia  
jehaf*.  
Palmate  
hair (after  
Patton).

**MYZOMYIA MANGYANA.** Banks (1906).

" Philippine Journal Science, I., 9, 991 (1906).

Banks states that this mosquito bears a strong superficial resemblance to *M. ludlowii*, Theob., except that it is very much smaller and there is a very decided difference in the spotting of the wings. I have not seen this species, but it closely resembles *M. rossii*, Giles, and *M. ludlowii*. (♀ only.)

*Habitat.*—Mindoro, Rio Baco, Chicago, P.I. (R. C. McGregor Coll.).

*Time of capture.*—May 7, 1905. Majority of specimens, all ♀'s, gorged with blood.

**MYZOMYIA INDEFINATA.** Ludlow (1904).

*Myzomyia rossii* var. *indefinata*. Ludlow (1904).

Canad. Entomo., XXXVI., 299 (1904), Ludlow; Mono. Culicid. IV., 47 (1907), Theobald.

Philippine Islands.

*Note.*—Miss Ludlow writes me that "long study and acquaintance with *indefinata* has convinced me that it should never have been referred to *rossii*, and that it must stand as a distinct species."

**MYZOMYIA PYRETOPHOROIDES.** Theobald (1907).

Mono. Culicid. IV., 48 (1907).

Pretoria.

*Type* in the British Museum.

**MYZOMYIA CHRISTOPHERSI.** Theobald (1902).

*Anopheles listoni*. Liston (1901) (non Giles).

*Anopheles fluviatilis*. James (1902).

*Anopheles christophersi*. Theobald (1902).

Proc. Roy. Soc. lxix., 378, Jan. 1902; Mono. Culicid. III., 27 (1903); IV., 51 (1907), Theobald.

North Canara district ; Duars, India ; Kangra Valley ; Berars, Ellichpur ; Nagpur, Central Provinces ; Jeypore State, Goa, Bombay and Aurangabad, Hyderabad State ; Ceylon ; Perak.

*Additional localities.*—Meenglas, Duars, Jalpaiguri. 13. vii. 07 (C. Wallich) ; Calcutta (Lt.-Col. Alcock) two ♀'s ; Sylhet, Assam, 2. v. 05 (Major Hall) one ♂, in Indian Museum, Calcutta.

**MYZOMYIA CHRISTOPHERSI.** Theobald (1902).

var. *alboapicalis*. "nov. var.

♀. Like the typical form, but the female palpi have two very broad white apical bands, almost uniting and a third very small basal band.

*Habitat*.—Meenglas, Jalpaiguri, Duars, India (C. Wallich), one ♀.

*Type* in the Indian Museum, Calcutta.

**MYZOMYIA LEPTOMERES.** Theobald (1903).

Mono. Culicid. III., 38 (1903).

India.

*Type* in the British Museum.

Giles states in his Revision of the *Anophelinae* that "This species answers almost completely to Loew's description of *An. pictus*. The palpi, it is true, do not correspond, but it is clear from Loew's description that it refers to a ♂, whereas the present species is based on a single ♀, and Loew's description of them is very much what one would expect to meet with in the ♂ of Theobald's new species. Both, too, are Asiatic forms, though taken at widely different parts of the continent; and on the whole it appears to me preferable to recognise this as *pictus* to originating a new name, especially as, the types of Loew's species being no longer traceable, it must otherwise encumber nomenclature as a purely nominal species." The name of the Indian species I described in 1903 is retained; the description of *pictus* no more agrees with it than several other species. Until specimens taken again from the home of *pictus* are examined it cannot be said as to what *pictus* really is.

**MYZOMYIA CULICIFACIES.** Giles (1901) (♀ non ♂).

*M. listoni*. Giles (1901) (non Liston).

*M. indica*. Theobald (1901).

*Anopheles culicifacies*. Giles (1901). ♂ *turkhudi*.

Ent. Mo. Mag., p. 197 (1901), Giles; Mono. Culicid. II., 309 (1901); III., 39 (1903); IV., 51 (1907).

Hoshangabad, C. P.; Berar; Deesa; Lahore; Mian Mir; Madras, Ennur, Armageon on east coast; Nagpur, Central Provinces; Goa; Bombay; Secunderabad, Aurungabad in Hyderabad State; in the Deccan; Etewah, N.W. Prov.

*Additional localities*.—Rajmahal, Bengal, 31. vii. 07; Luck-

now, 21. i. 08 (R. H.) ; Ferozepore, Punjab (126 ♂'s, 460 ♀'s) ; Mandalay, U. Burma, ♂ and ♀, 13. and 14. iii. 08 (N. Annandale). All but the Ferozepore series in Indian Museum, Calcutta. The Ferozepore in the British Museum.

*Type* in the British Museum. Malarial carrier.

**MYZOMYIA RHODESIENSIS.** Theobald (1901.)

*Anopheles rhodesiensis.* Theobald (1901).

Mono. Culicid. I., 184 (1901) ; III., 35 (1903).

Rhodesia, Mashonaland ; Uganda.

*Additional localities.*—Bank of Lualaba River, Congo Free State, 10° 30' S. lat., four ♀'s, 27. vi. 07. In tent at night (Dr. A. Yale Massey) ; Leysdorp, Transvaal (Dr. Copland).

*Type* in the British Museum.

**MYZOMYIA NILI.** Theobald (1904).

First Rept. Gord. Coll. Well. Labs., p. 65 (1904), Theobald ; Mono. Culicid. IV., p. 43 (1907), Theobald.

Lado ; Jebel Akmet-Aga on White Nile and on Middle Sobat.

*Type* in the British Museum.

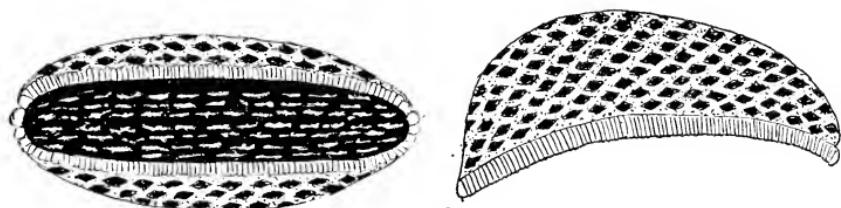


Fig. 7.

Ova of *Myzomyia nili*. Theobald.  
Length, .46 mm. ; breadth, .19 mm. (C. M. Wenyon).

**MYZOMYIA TURKHUDI.** Liston (1901).

*Anopheles culicifacies.* ♂ Giles. Ent. Mo. Mag. 197 (1901).

Ind. Med. Gaz., p. 441 (1901), Giles ; Mono. Culicid. III., 48 (1903) ; IV., 52 (1907), Theobald.

Lahore, Ellichpur ; Nagpur, Central Provinces ; Ferozepore ; Aurungabad, Hyderabad State ; Kashmir.\*

Malarial parasites develop in this species.

\* Brunetti (Catalogue Oriental Culicidae Rec. Ind. Mus. I., 312, 1907) records this species from the Andaman Islands (Major Anderson).

*MYZOMYIA HISPANIOLA.* Theobald (1903).

Mono. Culicid. III., 49 (1903).

Spain, Teneriffe.

Type in the British Museum.

*MYZOMYIA AZRIKI.* Patton (1905).

Journ. Bombay Nat. Hist. Soc. XVI., Nov. 2, 632 (1905).

"Palpi, three bands, apex black; thorax light brown, abdomen brown, legs dark, no bands."

♀. Head covered with brown upright forked scales, scattered among these are many brown curved scales. A tuft of light hairs is seen extending over the clypeus on both sides; antennae are dark, clypeus is light. Palpi are lightly scaled, with three white bands, apex black. Thorax is brown and covered with brown curved scales and hairs, scutellum is dark, with bristles along its border, the metanotum is black.

Abdomen is brown, covered with light hairs, there are no scales on the abdomen. Legs are brown with pale spots at the joints.

Wing; costa has five black spots and subcostal two. First longitudinal has four spots. The second vein has two on its main stem with two on the upper and two on the lower branch. The third has two spots, one near the base the other at the apical end. The fourth vein has two black spots on the main stems, one on the upper and one on the lower branch. The fifth vein has one black spot on the stem, one short and one long on the upper and two long spots on the lower branch. The sixth vein has one long spot extending almost up to the fringe. The fringe is dark with no light areas opposite the termination of the veins.

♂. Much lighter than the female. The palpi often have four pale areas, the apex often being pale. The wing is much lighter than in the female, many of the spots are wanting. The legs are brown, fore unguis unequal and uniserrated.

*Habitat.*—The Azriki Spring, near D'thala, Aden Hinterland (Patton)."

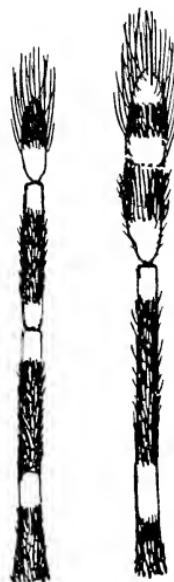


Fig. 8.

♂ and ♀ palpi of *Myzomyia azriki* (after Patton).

*Observations.*—A wild species found in one spring only by Patton, breeding in pools with *A. tibani*. The larva is light green with amber coloured head. Frontal hairs are simple and unbranched. Palmate hairs are present on fourth to sixth abdominal segments. Each blade is broad and stumpy with serrated shoulders and the filament is a mere spike; the antennae have a small spine on the outer side. The feeding brushes are placed laterally. It suspends itself like a *Culex* larva. From the head up to the second segment are submerged. It is difficult to find as it lies up among green weeds, etc., and seems to have the capacity of remaining a longer time below the surface than the larvae of the other four species.

Fig. 9.  
*Anopheles azriki.*  
Patton.  
Palmate  
hair (after  
Patton).



Patton sent me a very damaged specimen of this species; it seemed to be closely allied to *M. turkhudi*, but apparently distinct. The costa had five white scaled portions, and the third long vein had black spots and the wing fringes was dark throughout and showed no pale areas seen in *turkhudi*.

Patton also points out that the larva has no long branched hair at the end of the antennae which is described as being well marked in the larva of *turkhudi*.

#### MYZOMYIA ALBIROSTRIS. Theobald (1903).

Mono. Culicid. III., 24 (1903).

Malay States.

Type in the British Museum.

#### MYZOMYIA THORNTONII. Ludlow (1904).

Canad. Entomo., XXXVI., 69 (1904), Ludlow; Mono. Culicid. IV., 53 (1907), Theobald.

Philippine Islands.

#### MYZOMYIA HEBES. Dönitz (1903).

*Anopheles hebes.* Dönitz (1903).

Beit. z. Kennt. d. Anoph., 84 (1903), Dönitz; Mono. Culicid. III., 32; (1903), Theobald.

Dar es Salaam, E. Africa; Insiza, S.W. Africa.

Near *rhodesiensis*, Theob., but has prominent piebald fringe and palpi mainly white.

*MYZOMYIA DECEPTOR.* Dönitz (1903).

*Anopheles deceptor.* Dönitz (1903).

*Nyssorhynchus ? deceptor.* Dönitz — Theobald (1903).

Beit. z. Kennt. d. Anoph. XLI., 60 & 87 (1903), Dönitz; Mono. Culicid. III., 105 (1903), Theobald.

Sumatra.

*Additional locality.*—Trincomalie, Ceylon (E. E. Green).

*MYZOMYIA ? IMPUNCTA.* Dönitz (1903).

*Anopheles impunctus.* Dönitz (1903).

*Myzomyia impunctata.* Dönitz—Blanchard.

Beit. z. Kennt. d. Anoph. XLI., 67 (1903), Dönitz; Mono. Culicid. III., 54 (1903), Theobald; Les Moust. 622 (1905), Blanchard.

Wadi Natrûn, Lower Egypt.

### GENUS **NEOMYZOMYIA.** Nov. Gen.

Head with numerous upright forked scales and a dense tuft of scales at the posterior angles of the head; palpi not as long as the proboscis in ♀, not as densely scaled as in *Myzorhynchus*, but the scales scanty and outstanding. A tuft of long twisted hairs between the eyes.

Prothoracic lobes with a dense tuft of long outstanding scales and some narrow curved scales in front of the mesonotum, rest of scutellum and abdomen with curved hair-like scales.

Wings with the fourth long vein very near base of the third and the apex of the sixth bending almost at right angles to the costa. Fore unguis of male very unequal; mid small, slightly unequal, simple.

Allied to *Myzomyia* and *Pyretophorus*, but at once told by the marked area of scales at back of head and on the prothoracic lobes and by the venation.

I have formed this genus for *elegans*, James—Theobald. Until recently I could only be guided by James' description which is inadequate. The species is redescribed here.

*NEOMYZOMYIA ELEGANS.* James—Theobald (1903).

*Anopheles elegans.* James—Theobald (1903).

Mono. Culicid. III., 51 (1903), Theobald.

Head black behind, grey in front; palpi of ♀ with four white bands, the broadest apical. Thorax brown, ornamented

with paler hairs and scales and traces of a dark median line, two dark spots at the sides in front united to form one line; two long thin spots behind them; pleurae dark. Abdomen brown, clothed with brown hairs, golden at apex. Wings with four large and three small basal white spots, wing field much speckled with black and white. Legs black, femora and tibiae speckled with white; hind tibiae broadly white at apex, also metatarsal at base, tarsi with narrow creamy apical and basal pale bands.

♀. Head densely clothed with upright forked scales, black at the back and the lateral posterior tufts, white in front, some rather narrow thin straight scales project over the eyes; chaetae black, a creamy tuft of long twisted hairs projects between the eyes; antennae deep brown with brown hairs, basal segment paler with grey sheen, second segment longer and larger than the others, with hairs and fine scales; palpi as long as the black proboscis, densely but

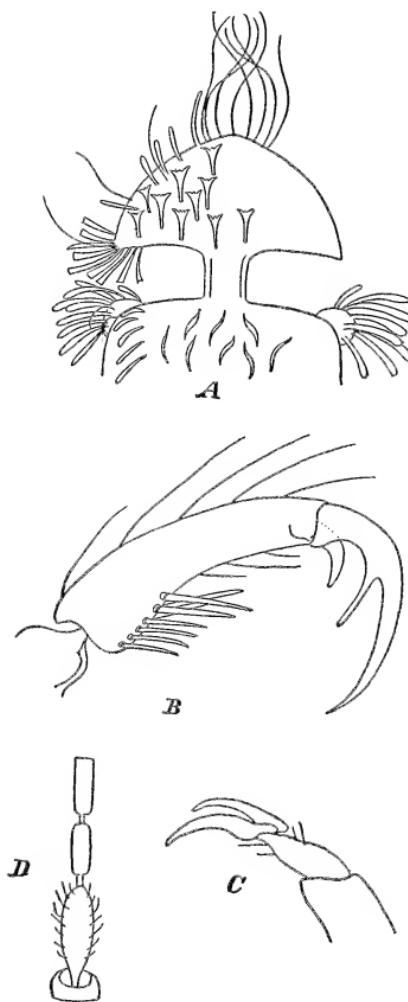


Fig. 10.

*Neomyzomyia elegans.* James.

A. Head and front of thorax; B. Fore unguis of ♂; C. Hind unguis; D. Base of antennae.

loosely scaled at the base, black, with rather broad white apex and three smaller white bands.

Thorax slaty grey, ornamented with rich brown, as follows:—

A more or less distinct median line running through to the dark bare space before the scutellum, traces of dark submedian lines, two large dark spots in front, one below and posterior to the other, another dark area about base of wing, and a long, straight, dark broad line above ; clothed with golden curved hairs, except for a few scattered pale narrow-curved scales in front, which are long where they project as a tuft over the head ; prothoracic lobes clothed with dense, black, long outstanding scales, forming lateral tufts ; scutellum pale, dark in the middle with golden hair-like curved scales ; border-bristles black ; metanotum black ; pleurae dark brown.

Abdomen deep brown with dark brown hairs, apical segment with bright golden chaetae and some small golden scales.

Legs black, femora, tibiae and metatarsi spotted with white, the tarsi with apical and basal narrow pale banding, apex of hind



Fig. 11.  
Wing of *Neomyzomyia elegans*. James. ♀.

tibiae broadly snowy white, which with basal snowy band of the metatarsi forms a broad prominent band.

Wings with *Myzorhynchus*-like scales. The outer costal border with four rather large and two or three small basal yellowish-white spots, the apical three uniform in size, the apical one spreads evenly on to the upper branch of second long vein, the second on to the first long vein, the third is larger on the first long vein and there are on it two small pale areas between the second and third. The fourth is even on the first, but there is a pale spot between third and fourth ; two between fourth and fifth and then a long pale patch on the first long vein, rest of veins with alternate dark and light areas, the fourth almost all dark except on its branches ; fringe with rather obscure pale spots at junction of the veins with it up to the outer branch of the fifth, not beyond ; the termination of the third vein is

markedly close to the fourth vein, the sixth bends almost at right angles before reaching the costa. First fork-cell considerably longer and narrower than the second, its base slightly nearer the base of the wing, its stem about two-thirds the length of the cell; stem of the second fork-cell much longer than the



Fig. 12.  
Wing of *Neomyzomyia elegans*. ♀. James.

cell; mid cross-vein short, just in front of the supernumerary, the posterior longer than the mid, more than three times its own length distant from it.

*Length.*—5 mm.

♂. Very like the ♀. Palpi markedly creamy-white on the apical third, with two narrow black bands; the black proboscis with minute creamy apex (labella); antennae with flaxen brown plume hairs. Wings with pale areas more pronounced than in the ♀. Legs ornamented as in the ♀: fore unguis very unequal, the large one uniserrate, the small basal one looking almost like a second tooth to the large one, base of the last tarsal with thick spines beneath; mid unguis small, slightly unequal, simple; hind equal and simple. Male claspers very long.

*Length.*—5 mm.

*Habitat.*—Karwar, Bombay Presidency (Coghill), Andaman Islands (Ray White); Meenglas, Jalpaiguri, Duars, India (8. viii. 07), 1 ♀ (C. Wallich).

*Observations.*—Redescribed from two ♀'s and one ♂. The genitalia of the latter, unfortunately spoilt in preparation, the claspers were unusually long. A very marked spotted legged species, with prominent tibio metatarsal white band and marked wing venation, male unguis and thoracic adornment.

I have redescribed this species from perfect material. It has been placed in *Myzomyia* and *Pyretophorus*, but in neither did it seem satisfactory. A fresh examination soon showed very

marked characters which at once separated it from both. Unfortunately the head will sink back into the thorax and the marked squamose character goes, but the dense outstanding fork scales can always be seen in a good specimen.

**GENUS CYCLOLEPPTERON.** Theobald (1903).

**CYCLOLEPPTERON.** Mono Culicid. II., p. 312  
and III., p. 58 (1903), Theobald.

**CYCLOLEPIDOPTERON.** n. s. Blanchard. Les  
Moustiques, p. 185 (1903).

**NOTONOTRICA.** Coquillett, Tech. Sc. 11, Bu.  
Ento., U.S. Dep. Agri. (1906).



Fig. 13.

*Cycloleppterion medic-punctatus.* (After Peryassu.)

## SYNOPTIC TABLE OF SPECIES.

- Palpi densely black scaled, unbanded; no marked costal spots ..... *grabhamii*. Theobald.  
 Palpi banded gold and black.  
   Scutellum with a black eyelike spot ..... *mediopunctatus*. Theobald.  
 Similar but palpi unbanded.  
   Wings with some inflated scales and 3 dark, costal areas, the median large, thus differing from *grabhamii* ..... *intermedium*. Chagas.



Fig. 14.  
*Cyclolepperon intermedium*. (After Peryassu.)

**CYCLOLEPPTERON GRABHAMII.** Theobald (1902).

Mono. Culicid. I., 205 (1902); II., 312 (1902); III., 56 (1903); IV., 55 (1907), Theobald.

Jamaica; Cuba.

*Type* in the British Museum.

**CYCLOLEPPTERON MEDIOPUNCTATUS.** Theobald (1903).

Mono. Culicid. III., 60 (1903), Theobald; Os Culicideos do Brazil, 80 (1908), Peryassu.

Brazil.

*Type* in the British Museum.

CYCLOLEPPTERON INTERMEDIUM. Chagas in Peryassu (1908).

Os Culicideos do Brazil, 85 (1908), Peryassu.

Brazil.

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GENUS **FELTINELLA**. Theobald (1907).

Mono. Culicid. IV., p. 56 (1907).

**FELTINELLA PALLIDOPALPI**. Theobald (1907).

Mono. Culicid. IV., p. 57 (1907), Theobald. ♂.

Sierra Leone, Mount Aureol (Capt. Grattan).

Type in the British Museum.

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GENUS **STETHOMYIA**. Theobald (1902).

Journ. Trop. Med. V., p. 181 (1902), Theobald; Mono. Culicid. III., p. 62 (1903), Theobald; ibid. IV., p. 59 (1907).

Four species occur in this genus.

SYNOPTIC TABLE OF SPECIES.

A. Cephalic scales flat.

Thorax with a silvery median and lateral lines.

Black species ..... *nimba*. Theobald.

B. Cephalic scales not so flat as in A.

Thorax unadorned.

Thorax with long, irregular, deep brown

hairs ..... *fragilis*. Theobald.

Thorax with a few white hair-like scales ... *culiciformis*. James  
and Liston.

Thorax with hair-like brown curved scales

and frosty grey tomentum ..... *pallida*. Ludlow.

**STETHOMYIA NIMBA**. Theobald (1903).

Mono. Culicid. III., 62 (1903); Os Culicideos do Brazil, 88 (1908),  
Peryassu.

British Guiana, Brazil.

Type in the British Museum.

## STETHOMYIA FRAGILIS. Theobald (1903).

The Entomologist, XXXVI., p. 257 (1903), Theobald; Mono. Culicid. IV., p. 60 (1907), Theobald.

Kuala Lumpur, Federated Malay States.

*Type* in the British Museum.

## STETHOMYIA (?) CULICIFORMIS. James and Liston (1904).

*Anopheles culiciformis*. James and Liston.

Mono. Ind. Anop., p. 122 (1904), James and Liston; Mono. Culicid. IV., p. 62 (1907), Theobald.

Karwar, Bombay Presidency, India.

## STETHOMYIA PALLIDA. Ludlow (1905).

Canad. Entomo. XXXVII., p. 129 (1905), Ludlow; Mono. Culicid. IV., p. 61 (1907), Theobald.

Philippine Islands.

## GENUS PYRETOPHORUS. Blanchard (1902).

PYRETOPHORUS. Blanchard, nov. nom. C. r.  
Soc. Biol. Paris, n. 23, p. 795 (1902).

HOWARDINA. Theobald. Journ. Trop. Med.  
V., p. 181 (1902).

## SYNOPTIC TABLE OF SPECIES.

A. Legs unbanded.

α. Palpi with 3 pale bands; apex black... *nigrifasciatus*. Theobald.  
αα. Palpi with 3 pale bands; apex white.

β. Wings with 4 large and 2 small  
black costal spots; mid cross-

vein very long..... *nursei*. Theobald.

ββ. Wings with 4 large black spots;  
mid cross-vein normal ..... *minimus*. Theobald.

βββ. Wings with 5 large black costal  
spots:

1st fork-cell much longer than

2nd..... *sergentii*. Theobald,

1st fork-cell about as long as

2nd..... *palestinensis*. Theobald.

B. Legs banded.

γ. Legs with apical banding.

Hind legs only banded.

Palpi with black apex and 3 pale bands.

3 dark lines on mesonotum ... *myzomyfacies*. Theobald.

2 dark lines on mesonotum ... *chaudoyei*. Theobald.

γγ. All legs with apical pale bands.

Palpi with 3 white bands.

Wings with 4 black costal spots;

fringe unspotted ..... *superpictus*. Grassi.

Wings with 4 large and 2 small costal spots; fringe spotted; apical palpal band broad, other 2 small..... *jeyporensis*. Theobald.

Apical and median palpal bands

broad; thoracic scales white... *austenii*. Theobald.

Thoracic scales creamy ..... *pitchfordii*. Power.

γγγ. Fore and hind legs with apical pale bands.

Four white palpal bands..... *cinereus*. Theobald.

C. Legs spotted and banded.

α. Last 3 hind tarsals all white.

Thorax golden scaled ..... *aureosquamiger*. Theobald.

αα. Last hind tarsal not white.

β. Femora and tibiae spotted.

Tarsal bands apical.

3 palpal bands.

Apical one broad, others narrow.

Fringe spots narrow ..... *costalis*. Loew.

Fringe spots broad ..... *merus*. Dönitz.

Apical and median palpal bands broad ..... *marshallii*. Theobald.

ββ. No spots on femora ..... *pseudocostalis*. n. sp.

βββ. Femora, tibiae and first tarsals spotted.

Tarsal bands apical..... *ardensis*. Theobald.

#### PYRETOPHORUS NIGRIFASCIATUS. Theobald (1907).

Mono. Culicid. IV., 65 (1907), Theobald.

Peshin, India.

*Additional locality*.—Larnaca, Cyprus, 28. ix. 07 (G. A. Williamson).

*Type* in the British Museum.

**PYRETOPHORUS NURSEI.** Theobald (1907).

Mono. Culicid. IV., p. 66 (1907), Theobald.

Quetta, India (Major G. S. Nurse).

*Type* in the British Museum.

**PYRETOPHORUS MINIMUS.** Theobald (1901).

*Anopheles minimus.* Theobald (1901).

Mono. Culicid. I., 186 (1901).

Hongkong.

*Additional locality.*—Pampanga, Camp Stotsenberg, Angeles, P. I. (Whitmore).

Described from a ♀ in Dr. Ree's collection, Hongkong.

**PYRETOPHORUS SERGENTII.** Theobald (1907).

Mono. Culicid. IV., p. 68 (1907), Theobald.

Algeria (Dr. E. Sergent).

*Type* in the British Museum.

**PYRETOPHORUS PALESTINENSIS.** Theobald (1903).

Mono. Culicid. III., 71 (1903).

Palestine, Cyprus.

*Type* in the British Museum.

**PYRETOPHORUS MYZOMYFACIES.** Theobald (1907).

Mono. Culicid. IV., p. 69 (1907), Theobald.

Algeria (Dr. E. Sergent).

*Type* in the British Museum.

**PYRETOPHORUS CHAUDOYEI.** Theobald (1903).

Mono. Culicid. III., 68 (1903).

Algeria.

*Type* in the British Museum.

**PYRETOPHORUS SUPERPICTUS.** Grassi (1900).

Reale Accad. Linc. (Stud. Zool. sulla Malaria), p. 78 (1900).

S. Europe.

**PYRETOPHORUS JEYPORENSIS.** James (1902).

*Pyretophorus jeypurensis.* Theobald (1903).

Sc. Mem. Ind. (Ne. Sc.), No. 2, p. 32 (1902), James; Mono. Culicid. III., p. 66 (1903), Theobald; ibid. IV., p. 70 (1907).

Jeypore, India.

*Additional localities.*—Central Provinces, Nagpur; Jakot, South India; Bombay.

**PYRETOPHORUS AUSTENII.** Theobald (1905).

The Entomologist, XXXVIII., p. 102 (1905), Theobald; Mono. Culicid. IV., p. 71 (1907), Theobald.

Bihé, Angola.

*Type* in the British Museum.

**PYRETOPHORUS PITCHFORDII.** Power (in Giles) (1904).

Revis. Anop., 34 (1904), Giles; Journal Trop. Med. VII., 365 (1904), Giles.

Evidently comes near *Austenii*, Theobald. I have not seen this species, and the description is inadequate.

Zululand.

*Additional locality.*—Uganda (Giles).

**PYRETOPHORUS CINEREUS.** Theobald (1901).

Mono. Culicid. I., 161 (1901).

S.W. and Central Africa.

*Type* in the British Museum.

**PYRETOPHORUS AUREOSQUAMIGER.** Theobald (1907).

Mono. Culicid. IV., p. 73 (1907), Theobald.

Pretoria (Dr. Theiler).

*Type* in the British Museum.

## PYRETOPHORUS COSTALIS. Loew (1866).

*Anopheles costalis.* Loew (1866).*Anopheles gambiae.* Giles (1902).*Anopheles gracilis.* Dönitz (1902).

Besch. ein Afrik. Dip. Nem., p. 55 (1866), Loew; Mono. Culicid. I., 157 (1901); III., 74 (1903); IV., 74 (1907), Theobald; Ann. Trop. Med. and Par. I., No. 1, 8 (1907), Newstead, and II., No. 3, 260 (1908), D'Emmerez de Charmoy.

Caffraria; Mashonaland; Sierra Leone; Lagos; Gambia; Djibouti, Harrar, Abyssinia; Mauritius; Reunion; Madagascar; Calabar; Nigeria; Togo and Cameroon; Entebbe, Maniumba, Kamuli, Gabula country, Busago, Sambroa in Bukedi country, Bikira, Buddu in Uganda; British Central Africa; Natal.

*Additional localities.*—Phoenix and Vacoa, Pre, Seche, Maheburgh in Mauritius (d'Emmerez de Charmoy); Banks of Lualaba River, Congo Free State, 10° 30' Lat. (27. vi. 07) (Dr. A. Yale-Massey), in tent at night; Congo Free State as follows: Zambie; Boma (Oct. 8 to 21); Princes Island; Matadi (Oct. 29 to Nov. 29); Tumba; Wathen; Leopoldville (Dec. 10. 03 to June 16. 04); Telegraph Post No. 4; Kitoto; Yumbie; above Lukolela in bush; Irebu; Coquilhatville; Bamamia; Lulongo; Nouvelle Anvers; Bokanga; Lisala; Bumba; Yambinga; below Basoko in bush; Stanley Falls; Benaburungu; Lokandue; Sendwe; Makula; Kasongo (Nov. 26. 04 to Feb. 13. 05); Tshofa; Lusambo; Lado Enclave (nov. Lemaire); Delagoa Bay, E. Africa, 2 ♀'s (José F. Sant Anna); Leysdorp, Transvaal (Dr. Copland).

*Observations.*—By far the commonest Anopheline in the Congo. It seems to feed most fiercely after sunset and again before dawn. Imagines taken in Congo in daytime and at night in European and native dwelling places, also far in the forest at a long distance from any village, also in the evening about the table lamp on board the steamer. Pupae and larvae found amongst aquatic grasses growing along river edges, in swamps, in small clear puddles of rain water lying on clayey soil, and in foul smelling pools used by the natives of the lower Congo for steeping manioc.

This mosquito has been proved to be the principal malaria carrier at Phoenix and Vacoa in Mauritius. Out of 228 examples caught at Chanfond Marsh, between February 4 (1908) and February 20 (1908), 73 were examined, of which 10 were found to be infected.

var. *melas*. Theobald (1903).

Mono. Culicid. III., 76 (1903).

Gambia.

*Type* in the British Museum.

**PYRETOPHORUS MERUS.** Dönitz (1903).

Zeitschrift für Hygiene XLI., 77 (1903), Dönitz; Mono. Culicid. III., 79 (1903), Theobald.

Dar es Salaam and Mbalba, S. of Victoria Nyanza and Franzfontein, S.W. Africa.

Evidently near *cinereus*, Theob., but in Table comes near *costalis*, but the wing fringe spots are broader. I have not seen this species. The femora and tibiae have light spots and stripes.

**PYRETOPHORUS MARSHALII.** Theobald (1903).

Mono. Culicid. III., 77 (1903), Theobald; Ann. Trop. Med. and Parasit. I., No. 1, 9 (1907), Newstead.

Salisbury, Mashonaland.

*Additional localities.*—Boma; Leopoldville (May); Coquillatville; Yambinga (Newstead).

*Observations.*—Newstead remarks on six ♀'s he received from the Congo Free State as follows:—"They were all associated with *P. costalis*, but may readily be distinguished from the latter by the characteristic banding of the palpi. It is important to notice, however, that among the long series of *P. costalis* there are many intervening forms between typical examples of the two species."

This being so it is quite reasonable to assume the marked insects I received from Mashonaland may be only sub-species or a variety of *costalis*.

*Type* in the British Museum.

**PYRETOPHORUS PSEUDOCOSTALIS.** nov. sp.

Thorax slaty grey in the middle, rich brown at the sides; abdomen black with golden hairs; palpi black with two broad apical white bands and one small basal one; legs with narrow apical banding. Wings normally as in *costalis*.

♀. Head black, clothed with dense black apically expanded fork-scales, with a patch of snow white ones in front; proboscis

thin, deep brown ; palpi long and thin deep blackish-brown, with a narrow white band and two broad white ones, one apical, the other involving both sides of the joint ; antennae deep brown.

Thorax bright slaty grey in the middle with a median and sub-median dark brown lines and rich dark brown areas at the sides, scantily clothed with narrow-curved greyish-white scales and golden and brown hairs, a dense tuft of longer scales in the middle line projecting over the head ; scutellum pale ochreous, brown in the middle with similar scales, border bristles brown with golden reflections ; metanotum deep brown.

Abdomen black with golden hairs.

Legs deep brown with apical yellow bands to tibiae, metatarsi and the tarsi, except the last two, with apical yellow bands and a narrow basal one on the tibiae ; ungues equal and simple ; the leg banding somewhat variable in number of bands. No spots as in *costalis*.

Wings with the outer border with three large white spots and two small basal ones, the first black areas spreads evenly on to the first long vein, the second has a white spot on it, the third also with a small basal white spot, base of the first long vein white ; greater part of the second pale scaled, a small dark spot near apex of the outer branch, beneath the apical black costal

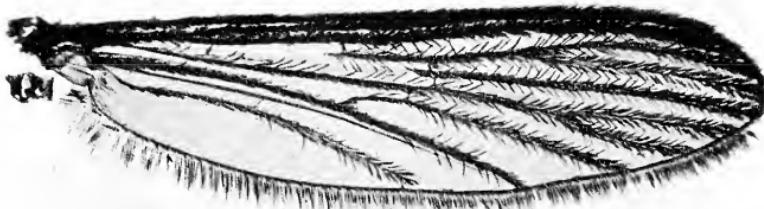


Fig. 15.  
Wing of *Pyretophorus pseudocostalis*. ♀. n. sp.

spot, a long black area and a small apical one on the inner branch and one on the stem at the base of the fork ; third long vein with two black spots, one near the base, another near the apex ; fourth with two dark spots on outer branch, one on inner and one long one on the stem near the fork ; base of the fork of the fifth black, two small spots on the outer branch and one near apex of inner and one on the stem near the base ; three on

the sixth, the basal one being small, the median long. First fork cell considerably longer and slightly narrower than the second, its base much nearer the base of the wing than that of the second, its stem not half the length of the cell; stem of the second fork-cell as long as the cell; median cross-vein just in advance of the supernumerary; posterior cross-vein not quite twice its own length distant from the mid; halteres pale creamy with fuscous knob.

*Length*.—4 mm.

*Habitat*.—Bihé, Angola, W. Africa (Dr. Creighton Wellman).

*Time of capture*.—24. ii. 05.

*Observations*.—Described from three ♀'s. It comes near *P. costalis*, Loew, but can at once be told by the absence of spots on the femora.

*Type* in the British Museum.

#### PYRETOPHORUS ARDENSISS. Theobald (1905).

Journ. Eco. Biol. I., 1, 17 (1905); Mono. Culicid. IV., 75 (1907), Theobald.

Natal.

*Type* in the British Museum.

#### PYRETOPHORUS ATRATIPES. Skuse (1888).

*Anopheles atratipes*. Skuse (1888).

Proc. Linn. Soc. N.S. Wales III., 2, 1755 (1888), Skuse; Mono. Culicid. I., 208 (1901), Theobald; Ann. Queensland Mus. 8, 12 (1908), Bancroft.

N. S. Wales and S. Queensland.

As far as I can see there is nothing to separate this species from this genus. The palpi only white at apex. Legs unbanded.

Dr. Bancroft writes as follows:—This mosquito is rather uncommon, only two or three specimens can be obtained occasionally in scrubs and swamps in S. Queensland from Caboolture to Moreton Bay and Ennogera. It is a vicious biter causing considerable pain. It will live in confinement and oviposits singly.

#### PYRETOPHORUS? FREERAE. Banks (1906).

Philippine Journal of Science, I., 9, 993 (1906).

This description reads as if it were a *Nyssorhynchus*, not a *Pyretophorus*. Banks says: "Small, dark grey, with light grey,

lanceolate thoracic scales and golden hair-like abdominal scales;\* fore and mid legs with banded tarsi; *posterior tarsi snow white*; palpi dark brown, white tipped and narrowly white banded before apex; a few white hairs at middle of palpi; frontal tuft white and nearly as long as head; antennae pale brown with white hairs."

Described from a single ♀ with no mid legs.

*Habitat*.—Manila, P.I. (Banks).

*Time of capture*.—23. x. 06.

*Type* in the Bureau of Science, Manila, P.I. No. 5975.

**PYRETOPHORUS ELEGANS.** James—Theobald (1903).

Mono. Culicid. III., 51 (1903), Theobald.

This is now removed to a new genus (*Neomyzomyia*). It cannot come satisfactorily in either *Pyretophorus* or *Myzomyia*.

**PYRETOPHORUS LEUCOSPHYRUS.** Dönitz (1901).

non James and Liston (1904) (= *elegans*).

Ins. Borse. V., 37 (1901), Dönitz.

Sumatra, Borneo.

This also apparently comes with *elegans*, James, in the new genus *Neomyzomyia*.

**GENUS MYZORHYNCHELLA.** Theobald (1907)

Mono. Culicid. IV., 78 (1907), Theobald; Os Culicideos do Brazil, 89 (1908), Peryassu.

**SYNOPTIC TABLE OF SPECIES.**

- |   |                          |
|---|--------------------------|
| End of hind foot pure white; mesonotum unicolorous with 3 dark lines; wings with costa distinctly spotted with yellow. Abdomen hairy, except the genital segment, which is scaly..... | <i>lutzi</i> . Cruz.     |
| The same, but with the costal spots white and white scales on the genital segment, smaller than <i>lutzi</i> .....  | <i>parva</i> . Chagas.   |
| Wings with yellow spots, 3 large and 2 small on costa .....   | <i>nigra</i> . Theobald. |

\* In his detailed description he refers to the scales as being "bluntly lanceolate, flat scales." This is more what one sees in *Nyssorhynchus* than *Pyretophorus*.

- The same, but a black ring on junction of 2nd and  
 3rd segments of hind legs ..... *nigritarsis*. Chagas.  
 The tibia of hind pair of legs show a white band.  
 Tibia of hind legs with apical white band  $\frac{1}{4}$  of its  
 length ..... *tibio-maculata*. Neiva.  
 Hind legs with the extreme ends of the tibiae and  
 joint of metatarsus white "em grande ex-  
 tensao" ..... *gilesi*. Neiva.

**MYZORHYNCHELLA NIGRA.** Theobald (1907).

Mono. Culicid. IV., 78 (1907).

Brazil ; Mexico.

*Type* in the British Museum.

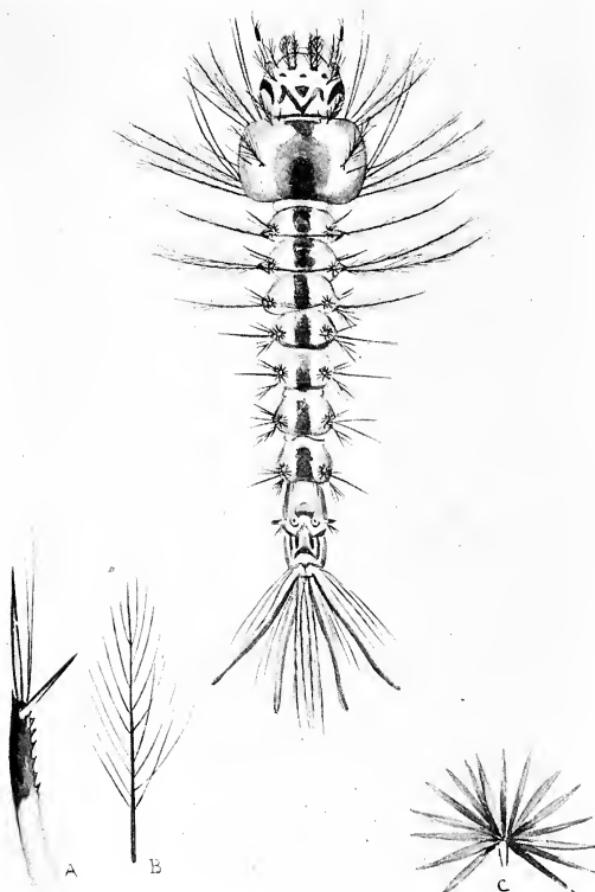


Fig. 16.

Larva of *Myzorhynchella lutzi* Cruz.

A, antenna ; B, frontal hair ; C, palmate hair (after Silva).

**MYZORHYNCHELLA LUTZI.** Cruz (1908).

Os Culicideos do Brazil, 89 (1908), Peryassu.

Brazil.

Larva and ova figured by Silva in Peryassu (Figs. 16 and 17).

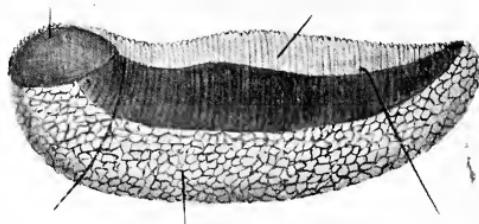


Fig. 17.

Ovum of *Myzorhynchella lutzi*. (After Silva.)

**MYZORHYNCHELLA PARVA.** Chagas (1908).

Os Culicideos do Brazil, 92 (1908), Peryassu.

Brazil.

Larva and adult figured by Silva in Peryassu (Fig. 18).

**MYZORHYNCHELLA NIGRITARSIS.** Chagas (1908).

Os Culicideos do Brazil, 97 (1908), Peryassu.

Brazil.

**MYZORHYNCHELLA TIBIA-MACULATA.** Neiva (1908).

Os Culicideos do Brazil, 101 (1908), Peryassu.

Brazil, in May.

**MYZORHYNCHELLA GILESI.** Neiva (1908).

Os Culicideos do Brazil, 103 (1908), Peryassu.

Brazil, in June.

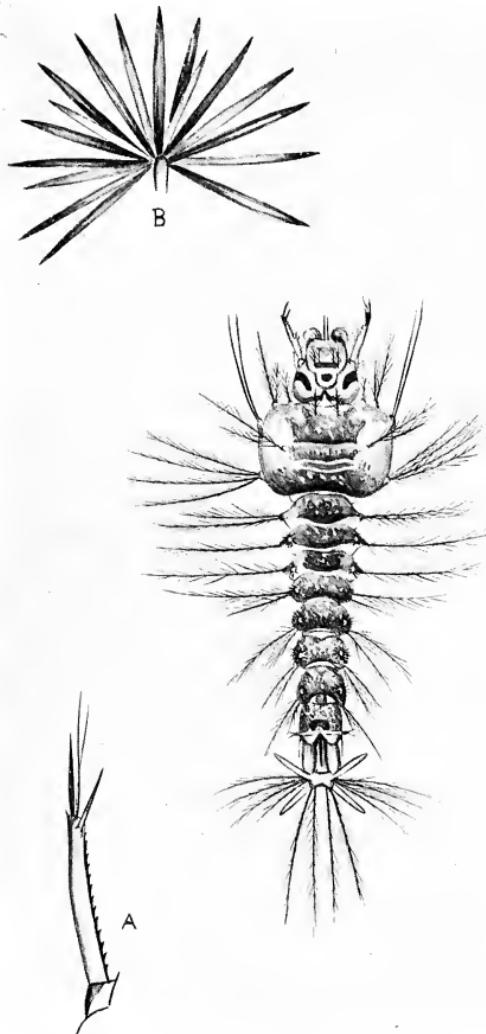


Fig. 18.

Larva of *Myzorhynchella parva*. Chagas.  
A, antenna; B, palmate organ (after Silva).

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**GENUS MANGUINHOSIA.** Cruz in Peryassu (1908).

Os Culicideos do Brazil, 112 (1908), Peryassu.

Thorax with piliform-curved scales and some narrow-curved and others flattened, on the sides.

Abdomen pilose, except the three last segments, which are clothed with scales.

Without tufts of scales on the posterior femora.

*Observation.*—This new genus resembles *Lophoscelomyia* by the scales on the terminal segments of the abdomen, but it is distinguished by absence of the scale tufts on the posterior femora which characterise the genus. On the other hand it resembles *Nyssorhynchus*, from which you can tell it by the scales on the thorax, which are all widely lanceolate on *Nyssorhynchus*, which all slope backwards on the mesonotum, by the scales of the head and the position of the scales of the abdomen.

MANGUINHOSIA LUTZI. Cruz in Peryassu (1908).

Os Culicideos do Brazil, 112 (1908), Peryassu.

Brazil. In June.

GENUS ARRIBALZAGIA. Theobald (1903).

Mono. Culicid. III., 81 (1903), Theobald; Os Culicideos do Brazil, 106 (1908), Peryassu.

Two species only occur in this genus. They tabulate as follows:—

1. Wings with three dark spots, very pronounced on the costa.  
Hind and mid legs much striped and spotted, the hind tarsi have apical and basal white bands ..... *maculipes*. Theobald.
2. Similar, but the hind tarsi as well as being banded are also spotted.  
Wings with the lanceolate scales broader than in *maculipes* ..... *pseudo-maculipes*. Chagas.

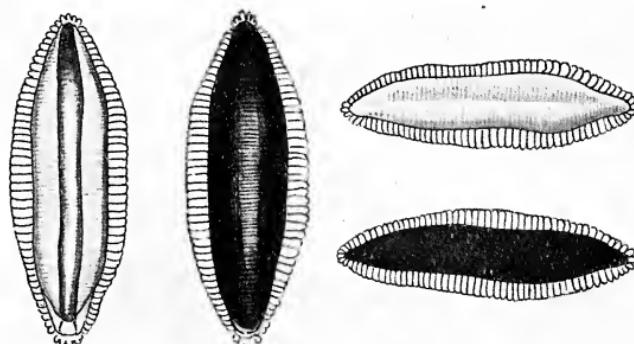


Fig. 19.  
Ova of *Arribalzagia maculipes*. Theobald (after Silva).

ARRIBALZAGIA MACULIPES. Theobald (1903).

Mono. Culicid. III., 81 (1903), Theobald; Os Culicideos do Brazil, 106  
(1908), Peryassu.

Trinidad; São Paulo, Brazil.

ARRIBALZAGIA PSEUDOMACULIPES. Chagas in Peryassu (1908).

Os Culicideos do Brazil, 108 (1908), Peryassu.

Brazil, July and August.

**GENUS MYZORHYNCHUS.** Blanchard (nov. nom) (1902).

ROSSIA. Theobald. Journ. Trop. Med. II., 181  
(1902).

MYZORHYNCHUS. Blanchard. C. r. Soc. Biol.  
XXIII., 795 (1902).

Mono. Culicid. III., 84 (1903) and IV., 80 (1907), Theobald.

A. Palpi unbanded.

$\alpha$ . Last hind tarsals brown.

1. Legs with pale apical tarsal bands.

$\beta$ . One fringe spot.

Legs not spotted ..... *barbirostris*. Van der Wulp.

2. Legs with speckled femora and tibiae  
and more numerous round-ended

scales on the wings ..... *pseudobarbirostris*. Ludlow.

$\beta\beta$ . Several fringe spots ..... *bancroftii*. Giles.

$\beta\beta\beta$ . No fringe spots.

One pale costal spot; wings with  
light and dark scales ..... *umbrosus*. Theobald.

Two pale costal spots; wings mostly  
dark scaled ..... *strachanii*. Theobald.

$\alpha\alpha$ . Last hind tarsal white ..... *albotaeniatus*. Theobald.

B. Palpi banded.

$\alpha$ . Last hind tarsal brown.

$\beta$ . Wing fringe with one pale costal spot *sinensis*. Wiedemann.

$\beta\beta$ . Wing fringe unspotted.

$\gamma$ . Palpi with four pale bands, apex  
white.

$\delta$ . Wings with 2 yellow costal spots.

Wings distinctly spotted ..... *vanus*. Walker.

Wings without prominent spots... *pseudopictus*. Grassi.

$\delta\delta$ . Wings with 2 white costal spots *minutus*. Theobald.

$\gamma\gamma$ . Apex of palpi all black ..... *nigerrimus*. Giles.

$\alpha\alpha$ . Last two hind tarsals white..... *mauritianus*. Grandpre.

$\alpha\alpha\alpha$ . Last three hind tarsals white..... *paludis*. Theobald.

**MYZORHYNCHUS BARBIROSTRIS.** Van der Wulp (1884).

*Anopheles barbirostris.* Van der Wulp (1884).

Leyden Museum Notes, VI., 46 (1884), Van der Wulp; Mono. Culicid. I., 146 (1901); III., 83 (1905); IV., 82 (1907), Theobald; Rec. Ind. Mus. II., pt. iii., No. 30, 288 (1908), Theobald.

Canara district, Goa Frontier; Calcutta, India; Kuala Lumpur; Annam; Philippine Islands; West Africa?; Selangor; Papua; E. Java; Shaohyling, China; Japan; Upper Burma.

*Additional localities.*—Phraptoon, Siam, 24. iii. 07. (Dr. P. G. Woolley); Rizal, Manila Waterworks Camp., i. (Banks), etc.; Nedumangad, 10 miles N.E. of Trivandrum, Travancore, 14. xi. 08. (Annandale); Province of E. Bengal, Assam, 15. i. 07 (Lt.-Col. Hall); Chittagong, E. Bengal, 15. viii. 08 (Lt.-Col. Hall); Andaman Islands (1908), (Ray White), named *M. bancroftii*, Giles, by Banks (specimen in Brit. Mus.); New Guinea Expedition, 04–05. Digoel (in Amsterdam Museum).

*Type* in the Leyden Museum.

**MYZORHYNCHUS PSEUDOBARBIROSTRIS.** Ludlow (1902).

Journ. N.Y. Ent. Soc. X., 129 (1902), Ludlow; Class. Geo. Dist. and Seasonal Flight Mosq. Philip. Isl., 11 (1903), Ludlow; Revis. Anop., 39 (1904), Giles; Canad. Ent. XXXVII., 135 (1905), Ludlow; Gen. Ins. Culicid., 10 (1905), Theobald; Philip. Journ. Sci. I., 9, 981 (1906), Banks; Mono. Culicid. VI., 83 (1907), Theobald; Mosq. Philip. Isl., 10 (1908), Ludlow.

Hagonoy, Bulacan, Luzon, Philippine Islands.

*Additional locality.*—Pampanga, Camp Stotsenberg, Angeles, P. I. (E. R. Whitmore).

**MYZORHYNCHUS BANCROFTII.** Giles (1902).

*Anopheles bancroftii.* Giles (1902).

Handbook Gnats (2nd ed.), 511 (1902), Giles; Mono. Culicid. III., 88 (1903), Theobald; Annals Queensl. Mus., No. 8, 14 (1908), Bancroft.

Bupengary, S. Queensland.

*Additional locality.*—Port Darwin, Queensland (Fred Dodd, per Dr. Bancroft), 2 ♀'s.

*Observations.*—Bancroft first found this large black mosquito in scrubs from Caboolture to Enoggera, biting fiercely; he says it is never plentiful; it can be told immediately it settles on you from its dark colour and dark black shaggy palpi.

*Type* in the British Museum.

**MYZORHYNCHUS UMBROSUS.** Theobald (1903).

Mono. Culicid. III., 87 (1903); IV., 85 (1907).

Pahang and Kuala Lumpur, Federated Malay States.

*Type* in the British Museum.

**MYZORHYNCHUS STRACHANII.** Theobald (1907).

Mono. Culicid. IV., 85 (1907).

Lagos, West Africa.

*Type* in the British Museum.



Fig. 20.  
*Myzorhynchus strachanii.* ♀. Theobald.

**MYZORHYNCHUS ALBOTAENIATUS.** Theobald (1903).

*Anopheles alboannulatus.* James and Liston (1904).

Mono. Culicid. III., 88 (1903), Theobald; Mono. Ind. Anop., 81 (1904),  
James and Liston.

Perak, Malay States.

*Type* in the British Museum.

**MYZORHYNCHUS SINENSIS.** Wiedemann (1828).

*Anopheles sinensis.* Wiedemann (1828).

*Anopheles jesoenensis.* Tsuzuki (1902).

*Anopheles plumiger.* Dönnitz (1901).

Aussereurop. Zweiflüg. Insek., p. 547 (1828), Wiedemann; Mono. Culicid. I., 137 (1901); III., 89 (1903); IV., 86 (1907), Theobald; Centralblatt für Bakteriol. XXXI., 763 (1902), Tsuzuki; Ins. Borse. Jan. 1901, Dönnitz.

Formosa, China, Japan, Hong Kong, Sumatra, Java, Borneo.\*

*Additional localities.*—Phrapatoo, Siam, viii. and ix. (Dr. P.

\* James records this from Calcutta and Jalpaiguri, and Adie from Ferozepore.

G. Woolley); Pampanga, Camp Stotsenberg, Angeles, P. I. (Whitmore); West Lake, Hangchow, China (C. E. Cornford), three ♀'s, 22. and 23. vi. 09 and 1. viii. 07; Ukhrul, Manipur, 6,400 ft., Lat. 25 N., Long. 94–95 E., viii. 08 (Rev. W. Pettigrew); 26. i. 03; 20. i. 03; 23. ii. 05; 27. v. 00; 4. and 7. vi. 05; Sylhet, Assam, 13. i. 03; 13. i. 04; 24. vii. 08 (Lt.-Col. Hall) (16); Ferozepore, Punjab (Major Adie); Calcutta, 9. vi. 08 and viii. 08. "In bathroom" (N. A.), 28. vii. and 9. vi. 08; Maddathoray, W. base of W. Ghats, Travancore, 18. ix. 08; at light on board steamer, Damukdia Ghat, E. Bengal, 30. iv. 08 (N. A.).

**MYZORHYNCHUS VANUS.** Walker (1860).

*Anopheles vanus.* Walker (1860).

*Anopheles annularis.* Theobald (non Van der Wulp).

Journ. Proc. Linn. Soc. V., 91 (1860), Walker; Mono. Culicid. I., 142 (1901); III., 90 (1903), Theobald; Rec. Ind. Mus. II., pt. iii., No. 30, 288 (1908), Theobald.

Malay Peninsula, China, Formosa, India, Philippine Islands.

*Additional localities.*—Calcutta (Oct., ? Nov., Dec.), and Port Canning, Lower Bengal (in Indian Museum, Calcutta); Dondra, Ceylon, 4. xii. 07 4 ♀'s (E. Green); Galle, Ceylon, 8. xii. 07 (E. Green).

*Type* in the British Museum.

**MYZORHYNCHUS PSEUDOPICTUS.** Grassi (1899).

Rend. dell. R. Accad. d. Lincei., 128 (1899), Grassi; Mono. Culicid. I., 140 (1901); III., 84 (1903) and IV., 87 (1907), Theobald.

Italy; Hungary.

**MYZORHYNCHUS MINUTUS.** Theobald (1903).

*Anopheles nigerrimus.* James and Liston (non Giles) (1900).

Mono. Culicid. III., 91 (1903); IV., 87 (1907); Mono. Anop. Ind., 79 (1900), James and Liston.

Punjab; and Kuala Lumpur, Federated Malay States.

*Type* in the British Museum.

**MYZORHYNCHUS NIGERRIMUS.** Giles (1900).

*Anopheles nigerrimus.* Giles (1900).

Handbook Gnats, 161 (1900), Giles; Mono. Culicid. I., 145 (1906), Theobald.

India.

Type in the British Museum.

**MYZORHYNCHUS MAURITIANUS.** Grandpré (1900).

*Anopheles mauritianus.* Grandpré (1900).

*Anopheles paludis, var. similis.* Theobald (1901).

*Anopheles tenebrosus.* Dönitz (1902).

Les Moust. Planter's Gaz. Press (1900), Grandpré; Mono. Culicid. I., 129 (1901); III., 85 (1903); IV., 88 (1907), Theobald; Anns. Trop. Med. and Parasit. I., No. 1, 10 (1907), Newstead; Anns. Trop. Med. and Parasit. II., No. 3, 260 (1908), D'Emmerez de Charmoy.

Mauritius; Madagascar; Uganda; Natal; Pretoria; British Central Africa; Cairo; Bahr el Ghazal; Wadi Natrun, Lower Egypt.

*Additional localities.*—Curepipe, Vacoa and Phoenix, in Mauritius (d'Emmerez de Charmoy); Kukema River, Bihé, Angola, West Africa (Creighton Wellman), 3 ♀'s, 30. i. 05 and 2. ii. 05; Zambie, Boma, Leopoldville (Dec.), Bamu Island, Kasongo (Dec.), in Congo Free State (Newstead); Bank of Lualuba River, Congo Free State, 10° 30' S. Lat., 27. vi. 07 (Dr. A. Yale Massey); Kie Road, King William's Town (C. G. H.), 16. and 17. ii. 07; Elsenberg, Stellenbosch (C. G. H.), 20. i. 07; Stent Pillows, 6. 7. and 8. ii. 07, Cape Colony (per Dr. Lounsbury); Tananarive, Madagascar (Dr. Salvat); Delagoa Bay (Jose Sant Anna).

*Notes and observations.*—Very common everywhere in Mauritius, especially at localities given above by d'Emmerez de Charmoy. All the specimens caught in the open air at Phoenix and Vacoa, where malaria is prevalent, were found not to be infected. Ross puts this as a doubtful carrier in Mauritius. The following note is reproduced:—"54 examples which were fed on blood containing crescents and other gametes gave one positive result; 56 other examples caught wild were negative."

In the Congo Free State imagines were caught only in the forest at Bamu Island. Larvae and pupae were taken from among the grass along the river edges, from swamps, from rain-

water collected in puddles on clayey ground and from stagnant, overgrown, but fairly clean water left in pits from which clay had been taken for brick-making (Newstead).

**MYZORHYNCHUS ZIEMANI.** Von Grünberg (1902).

*Anopheles ziemani.* Von Grünberg (1902).

Zool. Anziger. XXV., No. 677, July 21 (1902), Von Grünberg; Mono. Culicid. IV., 88 (1907), Theobald.

Cameroons.

This is evidently *mauritianus*, Grandpré.

**MYZORHYNCHUS COUSTANI.** Laveran (1902).

*Anopheles coustani.* Laveran (1902).

Archives de Parasitologie, 359 (1902), Laveran; Mono. Culicid. IV., 89 (1907), Theobald.

Reunion, Madagascar.

Probably only *mauritianus*, Grandpré, with rubbed palpi, Laveran stating that they were unbanded.

**MYZORHYNCHUS PALUDIS.** Theobald (1900).

*Anopheles paludis.* Theobald (1900).

Repts. Malaria Com. Roy. Soc. Eng., 75 (1900); Mono. Culicid. I., 128 (1901); III., 86 (1903); IV., 88 (1907), Theobald; Annls. Trop. Med. and Parasit. I., No. 1, 10 (1907), Newstead.

Bahr el Ghazal; Sambroa, Bukedi, Kisimbika, Uganda; Jur and Meshra, Sudan.

*Additional localities.*—Leopoldville (Dec. 1903 to Feb. 1904); Bamu Island; Bamamia; Eala; Barumbu; Kumba; Kasongo (Dec.); Lusambo, in Congo Free State; Leysdorp, Transvaal (Dr. Copland). 1 ♀.

*Observations.*—The adults were caught in the Congo Free State in forests, marshes and native huts and also at camps.

The adults were bred from larvae taken in stagnant water, in marshes and overgrown, but fairly clean water left in pits from which clay had been taken for brick-making.

*Type* in the British Museum.

GENUS **CHRISTYA.** Theobald (1903).

Rep. Sleeping Sickness Roy. Soc. VII., 34 (1903); Mono. Culicid. IV., 89 (1907), Theobald.

## CHRISTYA IMPLEXA. Theobald (1903).

Rep. Sleep. Sickness Roy. Soc. VII., 34 (1903); Mono. Culicid. IV., 89 (1907).

Togo, Jinja, Busago; Pokino, Toro; Bulema, Ankole; and Kavironda, Uganda.

*Additional locality.*—Mpuma, Uganda (Sir David Bruce), two ♀'s.

*Type* in the British Museum.

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GENUS **LOPHOSCELOMYIA.** Theobald (1904).

## LOPHOMYIA. Giles (non Theobald) (1904).

The Entomologist, XXXVI., 12 (1904), Theobald; Journ. Trop. Med. VII., 366, Giles (1904); Mono, Culicid. IV., 91 (1907), Theobald.

## LOPHOSCELOMYIA ASIATICA. Leicester (1904).

The Entomologist, XXXVI., 13 (1904); Mono, Culicid. IV. 92 (1904), Theobald.

Ampang Jungle, six miles from Kuala Lumpur, Federated Malay States.

*Type* in the British Museum.

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GENUS **NYSSORHYNCHUS.** Blanchard (nov. nom.) (1902).

## LAVERANIA. Theobald. Journ. Trop. Med. II., 181 (1902) Theobald.

## NYSSORHYNCHUS. Blanchard. C. r. Soc. Biol. XXIII., 795 (1902) Blanchard.

The species of this genus tabulate as follows:—

A. Last hind tarsals brown.

  a. Legs spotted.

    β. Apical pale bands to legs.

      Proboscis dark..... *stephensi*. Liston.

      Proboscis pale on apical half ..... *masteri*. Skuse.

    ββ. Apical and basal pale banding ..... *annulipes*. Walker.

- B. Last hind tarsal white.
- a.* Eggs spotted with white.
    - Palpi with 3 white bands ..... *willmori*. James.
    - Palpi with 4 white bands ..... *maculatus*. Theobald.
  - aa.* Legs not spotted, four palpal bands ..... *karwari*. James.
- C. Last two hind tarsals white.
- Legs with mottled femora, tibiae and meta-tarsi, 3 white palpal bands.
    - Two apical palpal bands close together..... *theobaldi*. Giles.
    - Two apical bands far apart ..... *pretoriensis*. Theobald.
- D. Last  $2\frac{1}{2}$ - $2\frac{3}{4}$  tarsals white..... *tibani*. Patton.
- E. Last three hind tarsals white.
- a.* Palpi with 3 white bands.
    - b.* Palpi spotted, legs spotted ..... *maculipalpis*. Giles.
    - Hind legs not so banded, larger and darker ..... *indiensis*. Theobald.
  - bb.* Palpi not spotted, legs spotted ..... *jamesii*. Theobald.
  - bb.* Palpi and legs not spotted.
    - γ.* Wings with 4 white costal spots... *fuliginosus*. Giles.
    - γγ.* Wings with 5 white costal spots *nivipes*. Theobald.
  - aa.* Palpi with 4 white bands ..... *philippinensis*. Ludlow.
- F. Legs uniformly brown..... *brunnipes*. n. sp.

**NYSSORHYNCHUS STEPHENSI.** Liston (1901).

non *Anopheles metaboles*. Theobald.

Ind. Med. Gaz. XXXVI. No. 12 (1901), Liston ; Mono. Culicid. III., 93 (1903), and IV., 96 (1907), Theobald.

Lahore ; Calcutta ; Madras ; Nagpur ; Ellichpur, in the Behars ; Mur, Punjab.

*Additional localities.*—Calcutta, flying in Museum Gardens (Ind. Mus. Coll.) ; Philippine Islands (Ludlow) ; Ferozepore (Adie) ; Lushai Hills, Assam (Macleod) ; Karachi.

**NYSSORHYNCHUS MASTERI.** Skuse (1889).

*Anopheles masteri*. Skuse (1889).

Proc. Linn. Soc. N.S. Wales, 1757 (1889), Skuse.

Sydney, N. S. Wales ; S. Queensland (Blanchard).

**NYSSORHYNCHUS ANNULIPES.** Walker (1850).

*Anopheles annulipes.* Walker (1850).

*Anopheles muscivus.* Skuse (1902).

Ins. Saund. I., 433 (1850), Walker; Mono. Culicid. I., 164 (1901), and III., 104 (1903), and IV., 97 (1907), Theobald; Annals Queensland Museum, No. 8, 14 (1908), Bancroft.

Tasmania; S. Queensland, N. S. Wales; Port Darwin, S. Australia.

*Note.*—Dr. Bancroft says of this species: “This is the common Anopheline or Spear Mosquito, plentiful all the year round in Southern Queensland, in forest as well as in scrub country and even coming into houses. It will bite at any time, and possibly is the mosquito associated with malarial fever, in Southern Queensland at any rate. The eggs are laid singly, and the larvae float horizontally on the surface of the water. They live in salt water as well as in running fresh and stagnant waters; they are found about habitations in small collections of water also, but not commonly. The larvae present many different appearances, some being quite black, others brown with white spots.

This mosquito will live in confinement for about a month if fed on dates and will oviposit whilst caged.

The mosquitoes hatched from larvae, that have been starved, are very small in size, and it is a question whether they are not what Skuse, and after him Theobald, regarded as *Nyssorhynchus masteri*. Theobald, in his description of *N. masteri*, from small specimens from Queensland, makes these observations: ‘Very like and closely related to *N. annulipes*, but the female can easily be told by the proboscis being paler at the tip. It is also smaller in size, and Skuse says that the sub-costal transverse vein is placed considerably beyond the middle of the auxiliary vein, whilst in *N. annulipes* it is situated in the middle.’ These characters I find will not hold in Queensland specimens.”

**NYSSORHYNCHUS WILLMORI.** James (in Theobald) (1903).

*Anopheles willmori.* James (1903).

*Nyssorhynchus willmorei.* James—Blanchard (1905).

Mono. Culicid. III., (1903); IV., 97 (1907), Theobald.

Lahore, Kashmir, Ceylon and Malay States.

*Additional locality.*—Meenglas, Jalpaiguri, Duars, India (C. Wallich), one ♀ and one ♂ (in Indian Mus. Coll.).

**NYSSORHYNCHUS MACULATUS.** Theobald (1901).

*Anopheles maculatus.* Theobald (1901).

Mono. Culicid. I., p. 171 (1901); III., 96 (1903); IV., 97 (1907), Theobald.

Lahore; Bengal Duars; Kurseong; Punjab; Hong Kong.

*Additional localities.*—Naraghat, Nepal, 25–26. ii. 08; Thamaspur, Nepal, 18–20. ii. 08. ♂ and ♀; Perak and Dindings, Straits Settlements. (In Indian Museum, Calcutta.)

Three rather large specimens, but otherwise quite typical; the apical abdominal scales quite distinct. Anyone examining these specimens will see the errors in James and Liston's remarks *re* this well marked species.

One ♂ from the Punjab? has the outer costal border very dark, showing no third pale costal spot. (In Indian Museum, Calcutta.)

*Type* in Dr. Rees' collection.

**NYSSORHYNCHUS KARWARI.** James—Theobald (1901).

*Anopheles karwari.* James—Liston (1901).

Mono. Culicid. III., 102 (1903), and IV., 98 (1907), Theobald.

Karwar, Goa, India; Kuala Lumpur, Federated Malay States.

**NYSSORHYNCHUS THEOBALDI.** Giles (1901).

*Anopheles theobaldi.* Giles (1901).

Ento. Mo. Mag. XXXVII., 198 (1901), Giles; Mono. Culicid. II., 311 (1901), Theobald; Ind. Med. Gaz., XXXVI., 365 (1901), Liston; Handbk. Gnats, 2nd ed., 299 (1902), Giles; Mono. Culicid., III., 95 (1903); IV., 98 (1907), Theobald; Revis. Anoph. 43 (1903), Giles; Mono. Anop. Ind. 97 (1904), James and Liston; Les Moust., 209 (1905), R. Blanchard; Mono. Culicid. IV., 98 (1907), Theobald; Mosq. Philip. Isls., 10 (1908), Ludlow.

Sambalpur, Lahore; Dacca; Nagpur; Ellichpur, Berar; Shahjahanpur, N. W. Provinces, India, Aden Hinterland (?).

*Additional localities.*—Philippine Islands (Ludlow); Bombay (Brunetti).

*Type* in the British Museum.

Malarial carrier.

**NYSSORHYNCHUS PRETORIENSIS.** Theobald (1903).

Mono. Culicid., III., 99 (1903).

Pretoria; Natal.

*Additional locality.*—Leysdorp, Transvaal (Dr. Copland).

*Type* in the British Museum.

**NYSSORHYNCHUS TIBANI.** Patton (1905).

*Anopheles (Nyssorhynchus) tibani.* Patton (1905).

Journ. Bombay Nat. Hist. Soc., Nov. 2, 629 (1905).

Palpi, three white bands, sometimes four, remainder black. Thorax black with silvery mottling with many light curved scales. Legs banded, hind leg has  $2\frac{1}{2}$ - $2\frac{3}{4}$  segments pure white.

"♀. Head black with silvery dots here and there; occiput and nape are covered with black, upright forked scales. Scattered about are many white spindle-shaped scales. A tuft of light hairs spread over the clypeus. Palpi are black, with three white bands, including the apex, the bands are arranged as follows:—A narrow white band is situated towards the base, a broader band about the centre and an equally broad band at apex. There is sometimes a narrow black band dividing the apical band into two. Proboscis dark brown and longer than the palpi, clypeus is black. Antennae dark with light and dark hairs, basal segments are globular and have a few white scales on its inner side.

Thorax: prothoracic lobes are black with long light curved hairs, dorsum of thorax is covered with light and dark scales, with many spindle-shaped scales.

The dorsum has a general silvery appearance. Scutellum is dark with a row of black bristles and scales. Metanotum is dark, halteres dark with a few minute flat scales.

Abdomen is covered with black hairs, there are a few scales on the last abdominal segment.\*

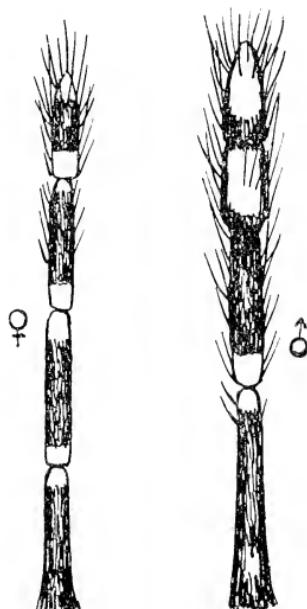


Fig. 21.

*Anopheles tibani.* Patton.  
♂ and ♀ palp (after Patton).

" Wing is much spotted, costa has six dark spots and subcostal two. The first longitudinal has six spots, the central spot being divided into three. The second vein has two dark spots on main stem, sometimes three and two long ones on each branch. There is sometimes a second spot on lower branch. The third longitudinal has a small basal spot and a long apical one, this latter is occasionally divided into two unequal black

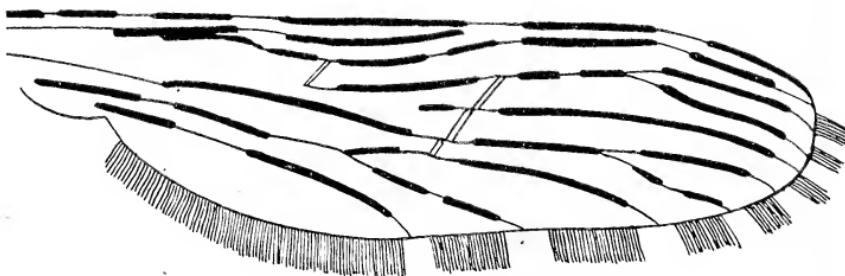


Fig. 22.

*Nyssorhynchus tibani*. Patton. (Copy of Patton's figure.)

spots. The fourth vein has two spots on the main stems, with two on the upper and two on the lower branch. The fifth vein has two on the main stem, with two, often three on upper, and two on the lower branch. The sixth long vein has three dark spots. The fringe is dark with light areas opposite the terminations of the veins and their branches.

Legs are black with many white spots; hind leg has  $2\frac{1}{2}$ - $2\frac{3}{4}$  white tarsi; the first tarsus has its lower third covered with white scales, the remainder is black. The metatarsus has a distinct white band at its lower end, this band is most constant, the remainder is speckled. The tibia is spotted and has a distinct black band at its lower end. The femur is black with many white spots. Mid-leg, all the tarsi are black, the joints are white, metatarsus, tibia and femur black with many white spots. Fore-leg, the two lowest tarsi are black, the second has a well marked and constant white band, the first also has a pale band at its distal end.

♂. There are many broad upright forked scales on the head, otherwise the cephalic ornamentation is the same as in the female. Palpi have three, often four white bands, the basal, the smallest is often very indistinct, the central is longer, and the apical the same as in the female, is often divided into two. There are not complete bands as in the female; antennae have marked club-shaped ends, which are covered with dark bristles.

Thorax is black with a frosty appearance. The scales are the same as in the female.

Abdomen is black, the last segment alone has a few flat



Fig. 23.

*Nyssorhynchus tibani.*  
Palmate hair (after Patton.)

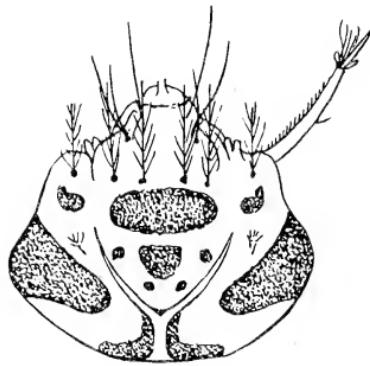


Fig. 24.

Head of larval *Nyssorhynchus tibani*.  
Patton (after Patton).

scales on its sides. Genitalia, medium-sized basal segment, apical segment is dark tapering to a fine point.

Wing same as in female, legs also the same, unguis unequal and uniserrated.

*Habitat*.—All rivers and springs in the Aden Hinterland, as far up as Jehaf (6,800 feet)."

*Life-history*.—Patton records the larva and ovum as follows :— " Larva, head dark brown to black, thorax and abdomen also dark brown. Cephalic ornamentation as shown in figure. The antennae have a small spine situated on the outer border ; frontal hairs are simple and unbranched. Palmate hairs are present from second to seventh segment inclusive. Blade (fig. 23) is long with marked serrations on one of the shoulders, the other has generally one notch. The filament is long and pointed.

" The egg is boat-shaped with long narrow floats which extend almost to both ends. They extend up to the frill, which is narrow and not marked. The floats do not approach each other in the middle line. It only breeds in running water and pools

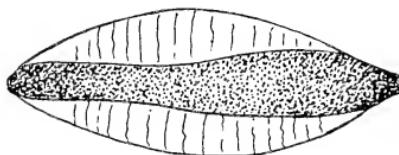


Fig. 25.

Ovum of *N. tibani*. Patton  
(after Patton).

connected with it. It is a wild species and does not come to human habitations. Negative results were obtained with it in connection with malaria carrying."

*Observations.*—Patton sent me a much damaged specimen of this insect. It is clearly distinct, but closely related to *Nyssorhynchus theobaldi*, the last two hind tarsals only are white in the latter, not  $2\frac{1}{2}$ – $2\frac{3}{4}$ , as in Patton's species, and the larval characters also differ. I do not know where the type is, Patton making no reference to it and giving no measurements.

**NYSSORHYNCHUS MACULIPALPIS.** Giles (1902).

*Anopheles maculipalpis.* Giles (1902).

Handbook Gnats, 2nd ed., 297 (1902), Giles; Mono. Culicid. III., 96 (1903), Theobald; Ann. Trop. Med. and Par. II., No. 3, 260 (1908), D'Emmerez de Charmoy.

Mauritius; Mashonaland.

*Additional localities.*—Tron Fanfaron, Port Louis, Mauritius (Major Fowler); Angola, West Africa (Dr. Creighton Wellman), 3 ♀'s; Leysdorp, Transvaal (Dr. Copland), 30 ♂'s and ♀'s.

*Notes and Observations.*—D'Emmerez de Charmoy says, "not common, a few specimens only caught by Major Fowler."

The spotting of the legs is most marked in the Angola specimens, and the last three hind tarsals are snow-white and the apex of the first.

My variety *Indiensis* (Mono. Culicid. III. 99, 1903) is a distinct species.

**NYSSORHYNCHUS INDIENSIS.** Theobald (1907).

*Nyssorhynchus maculipalpis.* Giles. var. *indiensis*. Theobald (1903).

*Anopheles maculipalpis.* James and Liston (non Giles). 1904.

Mono. Culicid. IV., 98 (1907); III., 99 (1903).

Central Provinces; Nagpur; Goa; Travancore; Karwar, Bombay Presidency.

Type in the British Museum.

**NYSSORHYNCHUS JAMESII.** Theobald (1901).

Mono. Culicid. I., p. 134 (1901).

India ; Ceylon.

*Additional localities.*—Shannagar, E. Bengal, 3. viii. 05 (C. A. Gourlay) (3) ; Calcutta, 5. viii. 08 (N. A.). (Ind. Mus. Calcutta.)

*Type* in the British Museum.

**NYSSORHYNCHUS FULIGINOSUS.** Giles (1900).

*Anopheles fuliginosus.* Giles (1900).

*Anopheles jamesii.* Liston (non Theobald) (1901).

*Anopheles leucopus.* Dönitz (1901).

Handbook Gnats, 160 (1900), Giles ; Mono. Culicid. I., 122 (1901) ; II., 307 (1901) ; III., 93 (1903) ; IV., 99 (1907), Theobald ; Ind. Mus. Rec. II., pt. iii., No. 30, 288 (1908), Theobald.

India, Ceylon, Federated Malay States, Philippine Islands.

*Additional localities.*—Calcutta, in November and December (specimens in Indian Museum, Calcutta).

Ferozepore, Punjab, 304 ♀'s and 29 ♂ in British Museum ; 20 ♀ and ♂ in Indian Museum, Calcutta (Lieut-Col. Adie) ; Balighai, near Puri, Orissa, 23 and 24. x. 08 (N. A.), numerous in old wells, resting by day ; Calcutta, 15. vii. 08 and 12. viii. 08, at light in house (N. A.) ; and in bungalows at light, 14. viii. 08.

*Type* in the British Museum.

**NYSSORHYNCHUS NIVIPES.** Theobald (1903).

The Entomologist, XXXVI., 258 (1903) ; Mono. Culicid. IV., 101 (1907), Theobald.

Kuala Lumpur, Federated Malay States.

*Type* in the British Museum.

**NYSSORHYNCHUS PHILIPPINENSIS.** Ludlow (1902).

*Anopheles philippinensis.* Ludlow (1902).

Journ. Ann. Med. Asso. XXXIX., 426 (1902), Ludlow ; Journ. N.Y. Ent. Soc. X., 128 (1902), Ludlow ; Canad. Entomo. XXXIV., 135 (1905), Ludlow ; Gen. Ins. Culicid., 10 (1905), Theobald ; Philip. Journ. Sci. I., 9 (1906), Banks ; Mono. Culicid. IV., 103 (1907), Theobald ; Mosq. Philip. Isl., 10 (1908), Ludlow.

San Jose, Abra, Luzon, Philippine Islands.

*Additional locality.*—Pampanga, Camp Stotsenberg, Angeles, P. I. (Whitmore).

*Note.*—Giles called this a *Pyretophorus* (1904).

*NYSSORHYNCHUS BRUNNIPES.* nov. sp.

Deep brown thorax with scattered white scales, showing a dark median line, narrow sub-median lines and two dark ocelli; palpi with a broad apical white band and two very narrow bands. Legs uniformly brown. Wings with black costa with three white costal spots and two smaller basal ones, an additional white spot on first long vein between the first and second and second and third.

♀. Head black with dense black upright forked scales behind, white in front and a tuft of golden chaetae projecting forwards between the eyes; antennae black, some white scales on the basal lobes; palpi black scaled, apex broadly white and with two narrow apical white bands below.

Thorax black with a median dark line and traces of sub-median ones and two ocelli; scantily covered with fairly large narrow-curved white scales, which are long and form a tuft projecting over the head; chaetae black, some golden over the roots of the wings; scutellum black with similar white scales and dark border-bristles; metanotum black.

Abdomen black with black and pale bristles.

Legs uniformly dark brown, unguis, equal and simple.

Wings with black scales with spots of creamy white as follows: three large ones on the costa with one small one near the base and a larger one basal, they extend on to the sub-costal



Fig. 26.  
Wing of *Nyssorhynchus brunneipes.* n. sp. ♀.

and first long vein, the first long vein has also an additional white spot between the first and second costal spots and the second and third and is white scaled from the third to its base, it is also white at the tip; some pale scales on the second and its

branches, but not forming any distinct spotting; a long white area on the third and a small one at its base; fourth with a pale spot at the base of the fork, one at each tip and one in the middle of the outer branch; fifth with a pale spot on the stem near the fork, two on the outer and one on the inner branch of the fork, each branch white at the tip; sixth white at apex and with two long white areas near the base; two prominent pale areas on the fringe at the apex similar to those on fringe of the outer costal border; border scales pale where all the veins join the edge and also the fringe, the fringe spots being indistinct grey; first fork-cell much longer than the second and slightly narrower, its base much nearer the base of the wing, its stem nearly one-fourth the length of the cell; stem of the second fork-cell nearly as long as the cell; mid cross-vein in front of the supernumerary and posterior, the latter not quite its own length distant from the supernumerary.

*Length*.—4 to 4·5 mm.

*Habitat*.—Bihé, Angola (Dr. Creighton Wellman).

*Time of capture*.—24. ii. 05.

*Observations*.—Described from three ♀'s. A very marked species with uniform brown legs and marked wing venation, the first fork cell being very long.

*Type* in the British Museum.

#### **NYSSORHYNCHUS PSEUDOWILLMORI. nov. sp.**

Head black behind, white in front; palpi with two broad apical white bands and a narrow one towards the base; proboscis pale at the apex. Thorax brown, covered with greyish-white scales. Abdomen brown with golden hairs. Legs brown, femora, tibiae and metatarsi spotted; tarsi of fore and mid legs with narrow pale apical bands except last two, in hind legs the metatarsus has a narrowish apical band, the first tarsal with a broad apical one, the second and third with broad apical and basal white bands, the last all white. Wings mostly creamy scaled, costa with four large and two small basal black spots.

♀. Head brown, densely clothed with black upright forked scales behind, white in front, around the eyes more appressed creamy scales, almost broad narrow-curved ones, a large tuft of creamy-white hair-like scales projects forwards between the eyes and black chaetae from the dark scaled area; palpi black with two broad white bands, one apical, the second about the same

width and very close to it, the third small, about half-way between the second and the base of the palpi; antennae black, some pale scales on the second segment, basal segment paler with grey sheen; proboscis black with yellowish-white labella.

Thorax brown with dense greyish-white scales and pale golden chaetae; scutellum similar and with similar scales;



Fig. 27.

Wing of *Nyssorhynchus pseudowillmori*. n. sp. ♀.

chaetae brown with pale golden reflections; metanotum deep brown; pleurae brown with grey sheen.

Abdomen steely black with brown hairs with pale golden reflections, more golden at apex.

Legs black, fore and mid femora with white spots, not so distinct on the hind pair, all the tibiae mottled with white spots; the fore metatarsi with two white median spots and white apex, the first and second tarsals white at the base and apex, third white at the base, last black; in the mid legs the first and second tarsals with a narrower apical band only, the first having a median pale band, last two all dark; in the hind the metatarsi are more spotted and the apical and basal white tarsal bands broader, the whole of the last tarsal is white.

Wings with mostly pale yellow scales, with black spots and areas as follows: four large black costal spots and two small basal ones, the apical one smaller than the other three large spots which are of nearly uniform size, the first, second and fourth spread evenly on to the first long vein, the third has only two black spots beneath it on the first long vein; the apical spot spreads evenly on to the outer branch of the first fork cell, which has another black spot near the base and a median spot and small apical one on the inner branch; apex of third dark and a trace of a dark spot near its base; two dark spots on the outer branch of the fourth and one on the inner and two dark spots on

the stem ; fifth with a dark spot at apex of each branch, and a trace near the base of the outer one ; traces of three dark spots on the sixth ; apex of fringe yellow, also pale spots where the fourth to sixth veins join it ; first fork-cell longer, but no

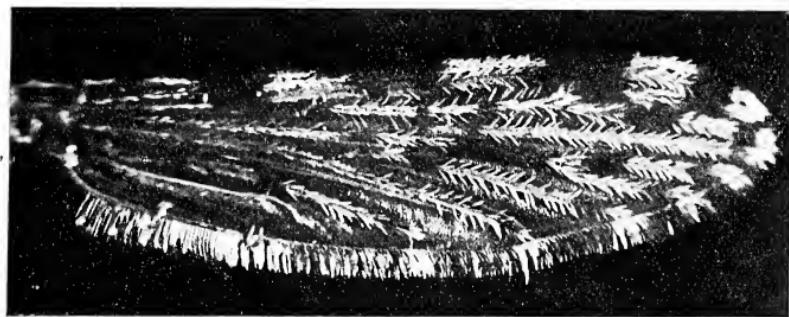


Fig. 28.  
Wing of *Nyssorhynchus pseudowillmori*. n. sp. ♀.

narrower than the second, their bases nearly level, the stem about half the length of the cell ; stem of the second fork-cell nearly as long as the cell ; supernumerary cross-vein longer than the mid, not quite its own length nearer the apex of the wing, the posterior sloping, about three times its own length distant from the mid and nearly twice as long.

Halteres with yellowish stem and fuscous knob.

*Length*.—4 mm.

*Habitat*.—Meenglas, Dooars, Jalpaiguri (C. Wallich).

*Time of capture*.—13. vii. 07 (C. Wallich).

*Observations*.—Closely related to *N. willmori*, but differs in the wing markings.

*Type* in the Indian Museum, Calcutta.

### GENUS **CELLIA**. Theobald (1903).

Mono. Culicid. III., 107 (1903).

### SYNOPTIC TABLE OF SPECIES.

A. Legs with last three hind tarsals white.

- Dark species ..... *argyrotarsis*. R. Desvoidy.
- Similar, but apex of abdomen whitish-grey *braziliensis*. Chagas.
- Yellowish species ..... *pulcherrima*. Theobald.

B. Legs with last hind tarsal white.

Femora and tibiae mottled; apical foot bands ..... *pharoensis*. Theobald.  
Femora and tibiae not mottled..... *bigotii*. Theobald.

C. Legs with last hind tarsal white except

base, 2nd and 3rd white ..... *albimana*. Wiedemann.

D. Legs with last hind tarsal dark.

Dark species.

3 white long lateral thoracic lines..... *squamosa*. Theobald.

Pale species.

Thorax with 2 ocelli; pleurae pale  
with large black spots ..... *kochii*. Dönitz.  
Similar, but wings more spotted ..... *punctulatus*. Dönitz.

#### *CELLIA ARGYROTARSIS.* R. Desvoidy (1827).

*Anopheles argyrotarsis.* R. Desvoidy (1827).

*Anopheles albifarsis.* Arribalzaga (1891).

*Nyssorhynchus albimanus.* Wiedemann—Blanchard  
(1905).

Essai sur les Culicid., 411 (1828), R. Desvoidy; Mono. Culicid. I.,  
123 (1901), Theobald.

St. Lucia, Antigua, Grenada, Jamaica, Cuba, Haiti, Porto  
Rico, British Guiana, Brazil, Argentine.

#### *CELLIA BRAZILIENSIS.* Chagas (in Peryassu) (1908).

Os Culicideos do Brazil, 118 (1908), Peryassu.

Brazil, in July.

This resembles *C. argyrotarsis*, but the abdomen has the apex  
whitish-grey.

#### *CELLIA PULCHERRIMA.* Theobald (1902).

*Anopheles pulcherrima.* Theobald (1902).

Prcc. Royal Soc. LXIX., 369 (1902); Mono. Culicid. III., 107 (1903)  
IV., 110 (1907), Theobald.

Lahore; Goa; Meean Mir, India; Turkistan, at Kokand (in  
University Coll., Helsingfors).

*Additional locality.*—Ferozepore district, Punjab, 168 ♀'s,  
16 ♂'s (Major Adie).

*Type* in the British Museum.

**CELLIA PHAROENSIS.** Theobald (1901).

*Anopheles pharoensis.* Theobald (1901).

*Cellia albofimbriata.* Giles (1904).

Mono. Culicid. I., 169 (1901); III., 109 (1903); IV., 106 (1907), Theobald; Anns. Trop. Med. and Parasit. I., No. 1, 10 (1907), Newstead.

Egypt, Mashonaland, Zomba, Sudan and Nile Provinces, Gambia, Ismailia, Suez Canal, Madagascar.

*Additional localities.*—Boma, Congo Free State (Newstead); Delagoa Bay, 2 ♀'s (José F. Sant Anna).

*Observations.*—At Boma the larvae were found amongst water-grasses growing along river edges, in swamps and in a dirty muddy puddle, and specimens were caught in dwelling-places.

Giles' *Cellia albofimbriata*, Rev. Anop. 1st Supp. 45, 3 (1904), is only a variety of *pharoensis*.

*Economic importance.*—Malarial parasites were seen to develop in this insect at Boma.

*Type* in the British Museum.

**CELLIA BIGOTII.** Theobald (1901).

Mono. Culicid. I., 135 (1901).

Chili.

*Type* in the British Museum.

**CELLIA ALBIMANA.** Wiedemann (1821).

*Anopheles cubensis.* Agramonte (1900).

*Anopheles albipes.* sub. sp. Theobald (1901).

*Cellia albipes.* Theobald (1903).

*Anopheles tarsimaculatus.* Goeldi (1905).\*

Dipt. Exot. I., 10 (1821), Wiedemann; Mono. Culicid. I., 125 (1901); III., 110 (1903); IV., 106 (1907), Theobald.

Jamaica, Antigua, Dominica, St. Lucia, St. Vincent, Grenada, Cuba, Cairiacore (one of the Grenadine Islands), Trinidad, British Guiana, Brazil, India.†

Giles recorded it from India. It does not seem to occur there.

\* Dyar and Knab say regarding *tarsimaculatus* as follows: "The specimens from Para are, however, not properly referable to *albimanus*, Wied., nor to *argyrotarsis*, Rob. Desv. Goeldi's name may therefore be used for this form." The only answer to give is that all the long series sent me by Professor Goeldi from Para are the same as those received from many other places, and are undoubtedly *albimana*.

† This is evidently an error, as it is a marked S. American and West Indian species.

*Additional localities.*—Potaro Road, near Potaro River, British Guiana, in May (W. J. Kaye); Runaway Bay, Jamaica (Lord Walsingham), April. This specimen showed the thoracic ocelli prominent and black spot in front of the scutellum.

*CELLIA SQUAMOSA.* Theobald (1901).

*Anopheles squamosa.* Theobald (1901).

Mono. Culicid. I., 167 (1901); III., 109 (1903); IV., 110 (1907), Theobald; Ann. Natal Mus. I., 142 (1907).

Mashonaland; British Central Africa; Uganda; Pretoria; Meshra, Bahr el Ghazal; Kajira, Masawa Country, West Elgon; Lusinga Island, Kavirando; Kafr el Dewar, Egypt; Transvaal; Madagascar.

*Additional localities.*—Bihé, Angola, two ♀'s, 3. viii. 05, 4 p.m.; Tananarive, Madagascar, in enormous numbers in tubes (Dr. Salvat); Natal (Hill and Haydon).

*Type* in the British Museum.

“*Larva*\*—Determined on four specimens, drawn from comparison of the four.

General appearance—A slender larva with much pigmentation in median strip.

Antennae—No branched hair on shaft, terminal spines, equal, hair divides into three branches.

Frontal hairs—Three pairs; anterior median and posterior vary (see plate). In three of the four specimens the external hair is dendriform, in the fourth it is rather penniform in shape. This larva was taken from a small collection, of which some five or six developed into imago of *squamosa*.

The exact shape of the hair is scarcely appreciable under a lower magnification than  $\times 100$ , and is readily overlooked and can scarcely be differentiated in the living larva. There is no other difference.

Palmate hairs—Rudimentary on thorax, well developed on first abdominal segment and exceptionally large on second to seventh inclusive. The leaflets are relatively narrow and few, about 16 in number (as in *Jacobi*), in contrast to *ardensis*, in which they are broad and numerous—about 25.

Average radius 0·144 mm.

Average relation of filament to total length of filament and leaflet as 0·36 is to 1. Maximum 0·40; minimum 0·35.

*Habitat.*—Found occasionally on coast and at levels of 2,000 ft. to 2,800 ft.; once in residual pools in a river bed, and three times in marshy pools directly fed by small springs.

\* Described by Hill and Haydon in Annals of Natal Museum I. (1907).

*Season*.—April to October.

*Relation to malaria*.—No evidence."

**CELLIA PUNCTULATA.** Dönitz (1901).

*Anopheles punctulatus*. Dönitz (1901).

*Anopheles tessellatum* (nom. nud.). Theobald.

*Myzomyia punctulata*. Dönitz—Giles (1904).

*Nyssorhynchus punctulatus*. Dönitz—Blanchard (1905).

Insecten-Börse, XVIII., 372 (1901), Dönitz; Mono. Culicid. I., 175 (1901); IV., 109 (1907), Theobald.

Sumatra and Borneo; Taipang, Malay States; New Guinea.

*Additional localities*.—Scariba, 1. iv. 08, three ♀'s, 13. iii. 08, one ♀; Cape Nelson, five ♀'s; Sudest, two ♀'s; Kwata, one ♀; Tamata, Mambare River, 20. viii. 07, one in British New Guinea (Dr. R. Fleming Jones).

**CELLIA KOCHII.** Dönitz (1901).

*Anopheles kochii*. Dönitz (1901).

Insecten-Börse, XVIII., 87, 2 (1901), Dönitz; Mono. Culicid. I., 174 (1901); III., 110 (1903); IV., 110 (1907), Theobald.

Sumatra and Java; Taipang, Perak; Kuala Lumpur, Federated Malay States; Singapore.

**CELLIA JACOBI.** Hill and Haydon (1907).\*

Ann. Natal Mus. I., 144 (1907).

"A large black and white mosquito with spotted legs. Palpi thickly covered with bushy black scales, a few white interspersed; irregular white bands at apex and last joint; a very narrow band about the middle, and a few white scales in an incomplete ring between that and the base. A tuft of white hairs on clypeus, over-hanging origin of palpi.

Thorax of sepia, with clothing of narrow-curved white scales forming three distinct longitudinal bands; three white bands on lateral aspect of thorax; abdomen black, thickly covered with narrow-curved yellow scales and long golden hairs; a thick lateral tuft of black scales on second to seventh segments.

\* The description agrees closely with *C. squamosa*, but the larva seemingly differs in regards to the frontal hairs.—F. V. T.

Legs; coxa and trochanter dark grey, flecked with white scales. Femur and tibia thin, white scales predominating over black; a few white flecks on black metatarsi; white bands at apex of metatarsus, and all tarsi, except, in the fore and middle legs, the third. Tip of last tarsus white in all legs.

Wing costa black; there are three main white spots, which are small; a fourth still smaller at the apex, and two white dots at the base. First longitudinal vein black, one white dot at base, a white spot under each of the four remaining costal spots, mostly smaller than the latter, and a minute group of white scales in the two long black stripes. Second longitudinal vein black, a white spot at the fork, and a large white patch on posterior branch of first fork-cell. Third vein mostly white, with a black spot at each end; fourth vein black, a white spot near the fork, which also is white, and a large white spot on each branch of the second fork-cell and at the tip of each branch. Fifth vein mostly white, a black patch on the stem and at fork, two on upper and one on lower branch. Sixth vein white, with three black spots. On the second and fourth veins white scales are interspersed with black in some specimens. Fringe black, with a white spot opposite termination of all branches of veins except the second.

*Length of detached wing.*—4·5 mm.

Principal variations in nine ♀'s are:—Very few white scales at fork of second longitudinal veins; the stem of the fourth vein almost all or entirely white; and three white spots on the first vein additional to costal spots, instead of two.

The *larva* determined on three specimens, drawn from one preserved, and two living.

General aspect: large, deeply pigmented.

Antennae: no branched hair on shaft, but a prominent curved spicule about one-third of length from base, on antero-external aspect; spines equal; terminal hair divides immediately into three.

Frontal hairs: variations as shown in Plate XXI., fig. *a*. The spicular branches on the anterior median are difficult to discern with low powers.

Palmate hairs: absent from thorax, very fine and rudimentary on first abdominal segment; rudimentary, but functionally active on second abdominal segment; well developed and well defined with broad leaflet on the third to seventh inclusive. Average radius 0·108 mm.; leaflets 15–18; relation of filament to length of filament and leaflet as 0·20–1, maximum 0·24, minimum 0·14; in the latter there is really no filament at all.

*Habitat.*—Found in small springs at sea-level in one neighbourhood only.

*Season.*—Cold weather.

*Relation to malaria.*—No evidence of any."

GENUS **NEOCHELLIA.** THEOBALD (1907).

Mono. Culicid. IV., 111 (1907).

## SYNOPTIC TABLE OF SPECIES.

A. Last hind tarsal white.

Apex of palpi black ..... *indica*. Theobald.Apex of palpi white ..... *dudgeonii*. Theobald.B. Last hind tarsal not white ..... *intermedia*. Rothwell.**NEOCHELLIA INDICA.** Theobald (1907).

Mono. Culicid. IV., 111 (1907).

Dehra Dhun, India.

*Type* in the British Museum.**NEOCHELLIA DUDGEONII.** Theobald (1907).

Mono. Culicid. IV., 113 (1907).

Kangra Valley, India.

*Type* in the British Museum.**NEOCHELLIA INTERMEDIA.** Rothwell (1907).The Entomologist, Feb. (1907), Rothwell; Mono. Culicid. IV., p. 115  
(1907), Theobald (♀ only).

“ ♂. Antennae brown with flaxen brown hairs ; palpi with two much swollen apical segments, on which are two large white bands ; on the apex of the normal segments are two small broken



Fig. 29.  
Wing of *Neocellia intermedia*. Rothwell. ♂.

bands immediately followed by three rather deep median bands and a broken basal band.

Wings with apical costal spot less strongly marked than in ♀. Apical spot on third long vein extremely faint ; spots on

lower fork cell very indistinct. Ungues, fore pair very unequal bi-serrate; mid and hind pair equal and simple.

*Length.*—4·5 to 5 mm.

*Habitat.*—Ferozepore district (Major Adie), 109 ♀'s and 18 ♂'s; Deesa (Major C. G. Nurse).

*Observations.*—The ♀ only was described by Rothwell. I found ♂'s in Major Adie's collection from Ferozepore.

H. F. CARTER." \*

*Types* in the British Museum.

GENUS **KERTÉSZIA.** Theobald (1905).

Ann. Mus. Nat. Hung. III., 66 (1905); Mono. Culicid. IV., 117 (1907),  
Theobald.

**KERTÉSZIA BOLIVIENSIS.** Theobald (1905).

Ann. Mus. Nat. Hung. III., 66 (1905); Mono. Culicid. IV., 118 (1907),  
Theobald.

Songo, Bolivia.

*Type* in the National Museum, Budapest.

GENUS **BIRÓNELLA.** Theobald (1905).

Ann. Mus. Nat. Hung. III., 69 (1905); Mono. Culicid. IV., 120 (1907),  
Theobald.

**BIRÓNELLA GRACILIS.** Theobald (1905).

Ann. Mus. Nat. Hung. III., 69 (1905); Mono. Culicid. IV., 121 (1907),  
Theobald.

Muina, New Guinea.

*Type* in National Museum, Budapest.

\* The ♂ was found and described by Carter.

GENUS **CHAGASIA.** Cruz. (1906).

Brazil-Medico. XX., 20, 199 (1906); Mono. Culicid. IV., 122 (1907),  
Theobald.

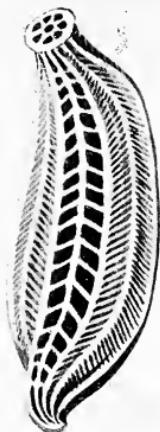


Fig. 30.

Ovum of *Chagasia fajardoi*  
(after Silva).



Fig. 31.

Mode of resting in *Chagasia fajardoi*  
(after Peryassu).

**CHAGASIA FAJARDOI.** Lutz (in Bourroul) (1904).

*Pyretophorus fajardoi.* Lutz (in Bourroul) (1904).

*Pyretophorus fajardi.* Blanchard (1905).

*Chagasia nivæ.* Cruz. (1906).

Mosq. do Brazil, 16, 36, 64 (1904), Lutz; Brazil. Med. XX., 20, 199 (1906),  
Cruz; Mono. Culicid. IV., 123 (1907), Theobald; Os Culicideos do  
Brazil, 122 (1908), Peryassu.

Minas, Brazil.

The strange ova, and the larva are figured in Peryassu's Os  
Culicideos do Brazil, and are reproduced here (Figs. 30, 32  
and 33).

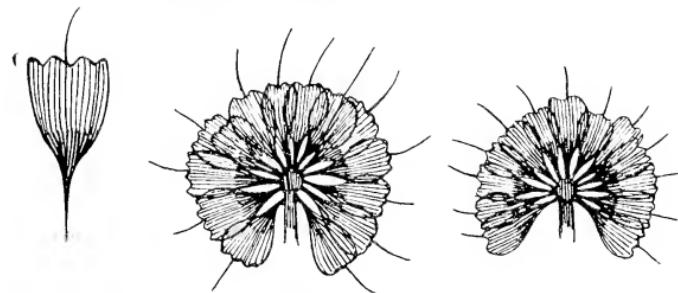


Fig. 32.  
*Palmate hairs of Chagasia fajardoi* (after Silva).

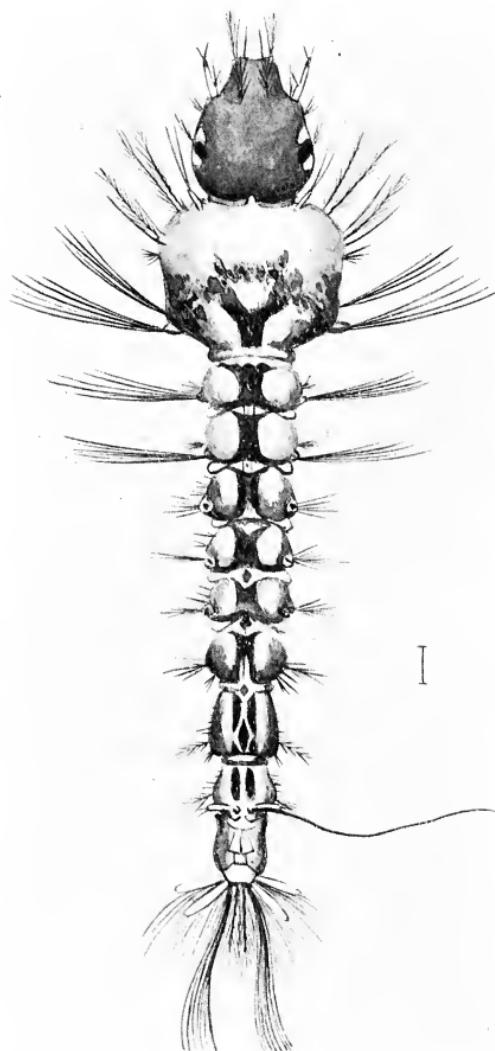


Fig. 33.  
*Chagasia fajardoi* (larva).

GENUS **ALDRICHIA.** Theobald (1903).\*

Mono. Culicid. III., 353 (1903), Theobald.

**ALDRICHIA** ERROR. Theobald.

Mono. Culicid. III., 353 (1903).

India.

*Type* in the British Museum. This has been broken since the species was described.

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GENUS **CALVERTINA.** Ludlow (1909).**CALVERTIA.** Ludlow (1909)

Canad. Entomo. XLI., 22, 234 (1909).

Head with forked scales, antennae bearing outstanding scales on the second joint, and more appressed ones on the first; thorax with curved and broadly fusiform scales, not markedly outstanding laterally; abdomen with hairs and on at least one segment, bearing long flat more or less spatulate scales.

The genus lies near *Chagasia*.

In the February number of the 'Canadian Entomologist,' Miss Ludlow described a new Anopheline, and referred it to *Chagasia*. Comparison with the *Chagasia* in the British Museum leads her to believe it to be new, and she therefore made it the type of a new genus, *Calvertia*, named in honour of Dr. W. J. Calvert, of St. Louis, formerly of the Medical Corps, U.S. Army. The name being previously used it was altered to *Calvertina*.

**CALVERTINA LINEATA.** Ludlow (1908).*Calvertia lineata.* Ludlow (1908).*Chagasia (?) lineata.* Ludlow (1908).

Canad. Entomologist, XL., p. 50 (1908).

"Head very dark, practically black, as is most of the insect, covered with dark brown and white forked scales, the latter on the vertex and cephalad part of the occiput, very long slender

\* This genus must be re-named, as *Aldrichia* was used by Coquillett in 1894, and I propose *Aldrichinella*.

white scales projecting forward between the eyes, dark bristles near the eyes ; antennae very dark, verticels and pubescence white, basal joint brown, with white upright flat scales, first and second joints with white scales, those on the second joint longer, more curved, largely fusiform and outstanding, those on the first joint narrow, flat and more closely appressed ; palpi heavily covered with dark brown scales, rather erect near the base, the apex white, and two narrow white bands dividing the remainder into three nearly equal parts ; proboscis heavily covered with dark brown scales, tip light ; eyes dark, clypeus dark.

Thorax : prothoracic lobes with broad fusiform white scales and dark bristles ; mesonotum covered sparsely with broad fusiform white scales arranged in lines, near the nape a few slender curved white scales, most of which project forward, a distinct line of the broad fusiform scales cephalad of and over the wing joint, not especially outstanding, but the scales broader than most of those on the mesonotum, a few scales near the middle of the mesonotum are either discoloured slightly or normally yellowish, two long oblong, bare, black lateral spaces about one-third the length of the mesonotum extend cephalad from near the scutellum ; scutellum black, partly denuded, but with a heavy bunch of flat, rather fusiform, white scales on the lateral lobes, bristles black ; pleura black, with grey lines ; metanotum very dark.

Abdomen black, densely covered with brown hairs, and the eighth segment and genitalia rather closely covered with long flat more or less spatulate brown scales.

Legs : coxae and trochanters testaceous with dark hairs and white scales ; all the femora covered with dark brown scales, the hind and mid legs with a white subapical spot on the cephalic aspect, and all of them with apex very narrowly white-banded ; tibiae all brown, with small apical spot or band ; first tarsal joints all brown, in the hind leg with small apical white spot extending slightly on the second joint, in the fore and mid with narrow apical white bands ; second tarsal brown, with broad white apical bands, broadened on the hind leg, in which all the remaining joints are pure white, and in the other legs the third and fourth are apically white-banded, the fore leg the more distinctly, the fifth brown ; unguis large, simple and equal.

Wing clear, covered heavily with dark brown scales resembling those found in *Myzorhynchus* ; costa with four small white spots, all apparently confined to the costa, and one at the apex ; a

white fringe spot at the junction of the upper fork of second long vein ; first submarginal cell large, a fourth longer and quite as wide as the second posterior, its stem half its length ; second posterior cell shorter than first submarginal, its stem nearly as long as the cell ; upper cross-veins equal and meet, posterior cross-vein equal to and a little more than its length distant from the mid. Halteres with light stem and dark knob.

*Length*.—4 mm.

*Habitat*.—Camp Gregg, Pangasinan, Philippine Islands. Taken in August.

Described from one very perfect specimen sent by Capt. Schreiner, Asst. Surg. U.S. Army. It is noticeably different even to the naked eye from most of the Anophelinae, but I am not sure that it belongs to Chagasia, as Mr. Theobald makes the outstanding scales of the thorax of generic value, and states specifically that the abdomen is nude."

### *POSITION UNCERTAIN.*

*CELLIA* (?) *FLAVA*. Ludlow (1908).\*

Mosq. Phil. Isls., 10 (1908).

" ♀. Head dark, covered mostly with light yellow or white forked scales, a few brown ones lateral and ventral, a heavy bunch of very long, slender white curved scales projecting forward between the eyes, some brown bristles around the eyes ; antennae almost white, a minute brown band at the base of each row of verticels, verticels and pubescence white ; palpi almost white, basal joint testaceous, the distal half covered with yellow and white scales, i.e., the apex with a broad band of white followed by a broad yellow band, a minute brown basal band on the ultimate and penultimate joints, the antepenultimate is distally white, then a broad yellow band occupying most of the joint, a narrow basal brown band, and the remainder of the palpi heavily scaled by brown with some intermixture of yellow scales. Proboscis light, base heavily brown scaled, then a mottled portion extending to the distal third, which is covered with light yellow scales, except a narrow brown band at its extremity, labella light orange ; clypeus testaceous ; eyes brown.

Thorax ; prothoracic lobes testaceous, covered with light and

\* Miss Ludlow kindly writes me that this is probably a *Nyssorhynchus*, and not a Cellia.

brown flat spatulate scales ; mesonotum light and delicate, with two small submedian or lateral brown spots (not scaled), about one-third the length of the mesonotum from the head, sometimes another pair just cephalad-lateral to these, a suggestion of a brown median line, the whole (except spots) covered with white slender hair-like curved scales, a few small flat curved or spatulate scales scattered throughout, more noticeable lateral, especially cephalad of the wing joint, and at the nape growing into a tuft of long flat curved spatulate scales, a dark median spot in front of the scutellum ; scutellum dark in the middle, side light, brown bristles ; pleura light, with some brown lines ; metanotum light, with median brown stripe.

Abdomen light or dirty grey, sparsely covered with long flat spatulate white or yellow scales and white or light yellow bristles, heavy lateral tufts of long brown broadly truncate scales on most (6) of the segments, the last segment more heavily white scaled.

Legs ; coxae light, sparsely covered with long spatulate white scales, and white bristles ; trochanters light, mostly brown scaled ; femora of the fore legs somewhat thickened at the base, in all legs covered with irregular bands or spots of brown and white, and have a very narrow white apical band ; tibiae mottled in the same way, first tarsal (metatarsi) joint also mottled, and has narrow apical light bands more marked on the hind legs ; remainder of tarsal joints on fore and mid legs more or less distinctly mottled and having narrow apical light bands ; on the hind legs the second tarsal has a broad apical white band, the third broad apical and basal white bands, the fourth and fifth marked in the same way ; unguis simple and equal.

Wings light, and mostly light scaled, on the costa are two tiny basal dark spots, four large brown spots, and a tiny brown spot between the two more proximal larger spots, all of which extend on the first long vein, and an analogous intermediate spot on the first long vein. Wing field somewhat spotted, but mostly light scaled ; a dark spot on each fork of the second long vein, third long vein light except small spots at the apex and near its base, two small spots on the forks of the fourth, and a couple on the stem, three small spots on upper fork of fifth, one on the lower fork, stem light except that close to the base is a small dark spot, sixth has three small spots, and the wing fringe is spotted between the junctions of every vein.

*Length.*—3·5 mm. 5 mm. with proboscis.

♂, much as ♀. On the antennae the bands at the bases of

the verticels are more yellow; the palpi are not so distinctly marked, there being a narrow brown band on the middle of the 'club,' a white band followed by yellow at the apex of the penultimate, with a brown spot on one side and a very narrow basal brown band, the antepenultimate has the light and dark bands rather irregularly placed and a tiny narrow white band at the base (in one specimen this is nude). The leg markings are, perhaps, more brilliant; fore unguis markedly unequal, the larger with a long tooth.

*Habitat.*—Camp Wilhelm, Tayubar, P. I.

Taken Sept. 1907.

Described from four specimens collected by the surgeon on duty at this port. It is a very unusual looking *Anopheline*, and its colouring is very attractive (Ludlow)".

#### ANOPHELES (?) ARABIENSIS.\* Patton (1905).

Journ. Bombay Nat. Hist. Soc., Nov. 2, 1905, p. 625, Patton.

"Palpi, three white bands, remainder brown, thorax mouldy, with silvery hair-like curved scales. Abdomen brown, covered with dark hairs. Legs banded at all joints.

♀. Head black, occiput and nape covered with brown upright forked scales. Long curved silvery hairs project over the eyes and clypeus. Scattered over the back of the head there are a few narrow-curved and spindle-shaped scales.

Palpi are not densely scaled and show three white bands including the apices. The lowest band is about a third of the way up the palpus and is intermediate in size. The central band is the smallest and the apical the broadest. Proboscis brown with yellow apex. Clypeus dark brown, antennae are dark with silvery hairs, the basal joint being large and globular.†

Thorax light brown, anteriorly there are a few dark, forked ‡ and spindle-shaped scales. Scattered over the dorsum there are long

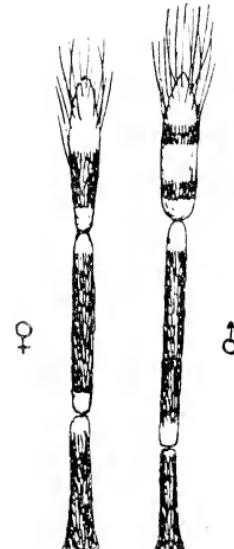


Fig. 34  
*Anopheles arabiensis.*  
Patton.  
Palpi (after Patton).

\* The author is unable to place this species in any known genus.

† This is always the case.—F. V. T.

‡ No such scales have been seen in any other Culicid on the thorax.

and short hair-like curved scales. Prothoracic lobes have a few hairs on them.

Abdomen has no scales on either surface, but long brown hairs.

Wing is spotted, with costa showing seven dark spots, four long and three short. Sub-costal vein has two dark spots below the fifth and sixth costal spots. The first longitudinal has four black spots, the second is divided into two, sometimes three. The second vein has two black spots on main stem, two on upper and three on lower stem of each branch—often one spot is wanting on each. The third vein has two small patches near its origin and one near its termination—this is most constant. The fourth long vein has two long black spots on the main stem and two on each branch. The fifth has one small spot on the main stem, two on the upper and one on the lower branch. The sixth vein has three spots, one near its origin, one in the centre and one at its termination. The wing fringe is dark with white areas at the junction of all the veins and with a white spot between the junction of the sixth vein and the base of the wing. This spot is sometimes absent.

Legs dark brown and yellowish bands at all the joints. The femora and tibia of the hind legs are speckled, the latter often has a well marked band at its lower end; unguis are simple and equal.

♂. The upright forked scales are better marked, otherwise the cephalic ornamentation is the same as in the female. Palpi are lightly scaled, the lowest band is the same as in the female, though less distinct. The next band is situated at the junction of the club-shaped apical segment with the lower end, then follows a long white band, then a small black patch, which is sometimes wanting, and lastly the apex is white. The thorax and abdomen are the same as in the female, sometimes a few spindle-shaped scales are seen on the last abdominal segment. Genitalia; basal segment is curved and globular, covered with brown hairs, apical segment is long and narrow terminating in a point.

*Habitat*.—Sheik Othaman to D'Thala; Aden Hinterland (Patton)."

*Observations*.—The above account is taken from Patton. It is certainly not an *Anopheles*, but the description lacks sufficient technical details to place it in its proper place, *at least if the scale structure is properly recorded*. It is important to settle this species as Patton says (p. 626):—"It is the common *Anopheles* of the district, and, as far as the writer can say, the only certain

malaria transmitter *in nature*." It loves breeding in running water, and is found in all the small streams and irrigation channels round about Lahej. It is also found breeding in wells. In most parts of the country water is obtained from deep wells, 40–50 feet below the surface. It abounds in all the pools and streams around Lahej and Salim, where there is much cultivation. The tents occupied by the Sepoys at Salim contained large numbers of this mosquito in September, January and February.

A much damaged specimen said to be this species was sent me by Patton (all ♀'s), and it could not be separated from *Anopheles wellcomei*, Theobald. It was examined with that species and I could detect no difference; but according to Patton (p. 627), they were also compared by Dr. Stephens with the type of *A. wellcomei*, which I later sent to the British Museum, and he informed Mr. Patton that they were distinct.

The larva is described as follows:—"Head black, thorax dark, brown in centre, paler at the sides, abdomen dark brown. The antennae have no spine on outer side. Frontal hairs simple and unbranched. Palmate hairs are present on 2–7th segment inclusive; there are undeveloped hairs on the first segment. The blade is long and dark, the shoulder serrated and the filament long and pointed."

"The egg is boat-shaped, with a narrow striated frill extending all round the margin of the upper surface. The float is lateral, extending nearly to each end, but nearer the narrower. It does not encroach on the frill. The ova are laid, as a rule, in the early morning on the surface of some floating object. They are laid in irregular groups, and only display star-shaped and other patterns when disturbed by the wind or current."

#### *ANOPHELES?* *PICTUS*. Loew (1845).

*Myzorhynchus?* *pictus*. Loew.

Dipt. Beitrage Posen, 4 (1845–1850); Mono. Culicid. I., 210–39 (1901); IV., 124 (1907), Theobald.

Rhode Island, Asia Minor.

#### *ANOPHELES?* *MARTINI*. Laveran (1902).

C. R. Soc. Bio. LIV., 907 (1902), Laveran; Mono. Culicid. IV., 125 (1907), Theobald.

Camboge.

*ANOPHELES?* VINCENTI. Laveran (1901).

C. R. Soc. Bio. XXIII., 993 (1901), Laveran; Mono. Culicid. IV., 125 (1907), Theobald.

Tonkin.

*ANOPHELES?* PURSATI. Laveran (1902).

C. R. Soc. Bio. LIV., 907 (1902), Laveran; Mono. Culicid. IV., 125 (1907), Theobald.

Camboge.

*ANOPHELES?* FARAUTI. Laveran (1902).

C. R. Soc. Bio. LIV., 908 (1902), Laveran; Mono. Culicid. IV., 125 (1907), Theobald.

Isle Vaté in the New Hebrides.

*ANOPHELES?* ANNULIPES. Arribalzaga (1878).

El. Nat. Arg. I., 149, 1 (1878), Arribalzaga; Mono. Culicid. I., 211 (1901); IV., 125 (1907), Theobald.

Buenos Ayres, in Baradero et Las Conchas.

*ANOPHELES?* ANTENNATUS. Becker (1903):

Mitteilungen a. d. Zool. Mus. Berlin II., 68 (1903), Becker; Mono. Culicid. IV., 126 (1907), Theobald.

Egypt.

*ANOPHELES?* BRACHYPUS. Dönnitz (1903).

Beitrage s. Kentniss d. Anop. Zeit. f. Hygiene XLI., 52 (1903), Dönnitz; Mono. Culicid. IV., 126 (1907), Theobald.

*ANOPHELES?* MACULICOSTA. Becker (1903).

Mitteilungen a. d. Zool. Mus. Berlin II., 69 (1903), Becker; Mono. Culicid. IV., 126 (1907), Theobald.

Egypt.

*ANOPHELES (?) FORMOSAENSIS* II. Tsuzuki (1902).

Archiv. für Schiffs- und Tropen-Hygiene VI., 289 (1902), Tsuzuki; idem, 296 (1902), Eysell; Zeitschrift für Hygiene XLIII., 234 (1903), Dönnitz.

Formosa.

*Notes.*—Transmits malaria. <sup>4</sup> I have only seen one ♂ mounted

in balsam and the wings are imperfect. The specimen was sent by Tsuzuki. I cannot place it generically from this species.

**ANOPHELES? MULTICOLAR.** Camboulin (1902).

C. R. Acad. des Sciences CXXXV., 704 (1902), Camboulin; Mono. Culicid. IV., 126 (1907), Theobald.

Isthme de Suez.

**ANOPHELES? MINIMUS.** Theobald (1901).

Mono. Culicid. I., 186 (1901); IV., 126 (1907), Theobald.

Pokfulam, Hong Kong.

The type of this species I placed in the British Museum collection as far as I can remember. It is not there now, however.

The following have been described by Dyar and Knab:—

**ANOPHELES OCCIDENTALIS.** Dyar and Knab (1906).

Proc. Biol. Soc. Wash. XIX., 159 (1906).

"Thorax with a broad dorsal pale lilaceous band, cut by three narrow brown stripes; a broad lateral brown band; pleura pale, with three brown stripes; abdomen, legs and palpi dark brown. Wings with the scales of the veins forming four black spots as in *A. quadrimaculatus*, but rather more rounded and contrasted."

118 specimens, California (McCraken); San Diego (Dyar and Caudell); Oregon (Currie), etc."

Probably an Anopheles, as one is led to believe it is near *maculipennis* or *quadrimaculatus*. The description is quite inadequate.—F. V. T.

**ANOPHELES ATROPOS.** Dyar and Knab (1906).

Proc. Biol. Soc. Wash. XIX., 160 (1906).

"Deep black; thorax obscurely lined with violaceous, especially posteriorly. Head, abdomen and legs black, no markings on the pleurae. Wing scales outstanding, uniform not forming spots, though a little thicker at the usual points indicating the spottings."

Allied to *A. quadrimaculatus* say, but rather smaller and deep black, not brown, the abdomen without traces of the lighter bandings.

Seven specimens, Florida (Byrd)."

## ANOPHELES BELLATOR.\* Dyar and Knab (1906).

Proc. Biol. Soc. Wash. XIX., 160 (1906).

" Palpi black; head black, tuft of pale scales between eyes. Thorax grey with four black longitudinal lines, the two nearest the middle narrower and stopping short of the base, the two lateral ones attaining the scutellum; before scutellum a short median black line; pleurae dark with two white stripes. Abdomen entirely dark. Costa of wing with six white spots, one basal, the last at extreme apex; third vein white, with a black spot at apex and near base; fifth vein white near base and at base of the fork, and a small white spot on the upper branch; fringe with two white spots, at lower fork of fourth vein and upper fork of fifth vein respectively.

Front legs with the femora with a black spot at base, a black dash at middle third and two black spots at apex; tibiae dark above, with two black, nearly encircling, spots at apex; first tarsal joint with a black ring near the base, second and third joints black at the base, fourth and fifth entirely black. Mid legs with femora mostly black; tibiae black, white at tip; first tarsal joint black, white at tip; second black at base, apical half white; third and fourth joints black, white at tip; fifth black. Hind legs with femora white, black above, with a black ring at the outer third; tibiae black above with two black rings toward apex; first tarsal joint black, with a white apical ring and white at extreme base; second, third and fourth joints black, with a white apical ring; fifth joint black.

Three specimens, Trinidad B.W.I. (F. W. Urich).  
Near *A. lutzii*, Cruz."

## ANOPHELES GORGASI. Dyar and Knab (1907).

Journ. N. York Ent. Soc. XV., 198 (1907).

" Palpi as long as proboscis, mostly black scaled, the terminal and penultimate joints light scaled except at the bases and apices; mesothorax grey with fine brown scales, a black spot in front of the scutellum, a pair of sublateral black spots medially; wings with veins scaled in black and white, two very large black patches on the costa, and a smaller one towards the base, and a smaller one at the apex, as in *A. albimanus*, Wied. The rest of the wing is too much denuded to describe. Abdomen with groups of outstanding scales, laterally at the apices of the segments, the dorsum clothed with yellow scales on a dark ground, the lateral tufts black. Legs mostly black scaled, hind legs with the apical half of the second, the third and the base of the fourth joints white scaled, the remainder of the fourth and basal half of the fifth segments black, the third joint with a large black patch

\* Probably a *Myzomyia*.—F. V. T.

on the under side, which reaches from near the base to beyond the middle.

*Length*.—3·5 mm.

One ♀ in poor condition, La Boca, Canal Zone, Panama (A. H. Jennings, collector). Named at the suggestion of Mr. August Busck in honour of Dr. W. C. Gorgas, Assistant Surgeon-General, U.S. Army, Chief Sanitary Officer of the Isthmian Canal Commission."

*Note*.—This is apparently a *Cellia* and not an *Anopheles*. The description is such that we cannot say if it is a valid species, and is only drawn up from one bad specimen.—F. V. T.

**ANOPHELES MALEFACTOR.** Dyar and Knab (1907).

Journ. N. York Ent. Soc. XV., 198 (1907).

"♀. Palpi long clothed with brown scales and black outstanding ones, which are grouped more or less in tufts, heaviest on the basal portions, slight sprinkling of lighter scales among the brown ones, particularly at the bases of the dark tufts; occiput black scaled, the eyes margined with white above, and where they join is a tuft of white hairs; mesonotum grey with reddish and bluish tinge and small dark freckles tending to form longitudinal rows, sparsely distributed narrow yellowish scales, a black spot at the base extending over the middle of the scutellum, and two small sublateral black spots medially, all three of these show a lighter margin; abdomen slender, grey, with lateral tufts of outstanding black scales at the apices of the segments; legs with the femora and tibiae black freckled with white, on the hind tibiae yellow scales predominate; tarsi black, ringed with white; on the hind legs the first tarsal joint is dark at the base, light at the apex and has six white rings of different lengths, second joint narrowly white at base, broadly so at apex, with a moderately broad white ring near the middle, and another narrower one between it and the base, third and fourth joints white ringed at base and apex with a broad central white ring, apical segment entirely whitish scaled; wings spotted, black and white, a large black patch margined with white on the costa near the middle, more basally a small costal patch and towards the apex another large one, all margined with white, scaling of the veins in patches of black and white scales, third vein with a small black spot at the base, the sixth vein with many black dots and dashes.

*Length*.—4·5 mm.

♂. Palpi with apical portion clubbed, clothed with yellow scales with golden lustre, a narrow dark ring at the middle of the club, the shaft ringed with a dull ochreous at the apex and at the constriction, and broadly marked with the same colour on the apical portion; antennae pale brown and ferruginous with silky lustre.

*Length*.—4·5 mm."

"Seven specimens, Chagres River, Panama (August Busck collector); Tabernilla, Canal Zone, Panama (A. Busck); Gatem, Canal Zone, Panama (A. H. Jennings). There is some variation in the banding of the hind tarsi. In two specimens the penultimate and apical white rings of the second joint are united; in one the apical white ring of the first joint is divided by a black bar, in another the penultimate ring is so divided, while in the third the apical, penultimate, antepenultimate and another white ring are so divided, this specimen having eleven white rings on this joint instead of seven as in the type."

*Note.*—This is apparently an *Arribalzagia*. The leg banding is quite distinct and should separate this species at once.—F. V. T.

**ANOPHELES CULICIFORMIS.** Cogill (1903).

Journ. Bomb. Soc. XV., 333 (1903).

Recorded from India. I have been unable so far to trace this.

**ANOPHELES SUBPICTUS.** Grassi (1899).

Atti. R. Accad. Lincei. Rend. VIII. 1 (1899), Grassi; Cat. of Diptera, i. 254 Kertes 3.

India Orientalis.

I have been unable to identify this insect.

**SUB-FAMILY MEGARHININAE.** THEOBALD.

**ANKYLORHYNCHAE.** Lutz.

**LYNCHIELLINA.** Lahille.

Four genera as described in this family, but one is probably a synonym. They tabulate as follows:—

- α. Palpi long in both sexes.
- β. Last segment of ♀ palpi round or blunt, as if broken ..... Genus *Megarhinus*. R.-Desvoidy.
- ββ. Last segment of ♀ palpi long and pointed ..... Genus *Ankylorhynchus*. Lutz.
- αα. Palpi of ♀ short.  
Palpi not more than one-third length of the proboscis ..... Genus *Toxorhynchites*. Theobald.

Banks describes a fourth genus *Worcesteria* on account of the ♀ palpi having three minute terminal segments. Some *Toxorhynchites* have one, some two, and others three, so that the genus *Worcesteria* is mentioned here as a doubtful genus.

### GENUS MEGARHINUS. Robineau-Desvoidy (1827).

#### LYNCHIELLA. Lahille.

*Essai sur les Culicides, Mém. Soc. d'Hist. Nat. de Paris, III., 412 (1827), Robineau-Desvoidy; Mono. Culicid. I., 215 (1901); III., 113 (1903); IV., 128 (1907), Theobald; Os Culicideos do Brazil, 125 (1905), Peryassu.*

Eleven definite species are known in this genus, and possibly others should be placed here. But as the genus has so far only been found in N. and S. America and the West Indies, I am inclined to believe that the other species of *Megarhinus* described only from ♂'s, from Ceylon, India, E. Indies, &c., belong to *Toxorhynchites*.

The *Megarhinus* tabulate as below :—

A. Apex of abdomen with no lateral tufts.

α. Tarsi with some white bands.

Thorax bright brown, a median blue line, one on each side, a blue patch over wings and on pro-thoracic lobes; scutellum deep purple in middle, pale green and blue at sides..... *ferox*. Wiedemann.

Thorax with metanotum in ♀ green, hind region blue and yellow; venter with central blue line, ♂ blue..... *fluminensis*. Neiva.

Thorax greenish black with few coppery scales, metallic blue anterior and posterior margins and an ill-defined median blue line and patches at middle of sides; scutellum metallic blue..... *hypoptes*. Knab.

αα. Tarsi unbanded.

Abdomen olive green ..... *longipes*. Theobald.

B. Abdomen lateral red tufts.

3rd segment of palpus as long as the 4th ..... *separatus*. Arribalzaga.

3rd segment of palpus longer than the 4th ..... *haemorrhoidalis*. Fabricius.

C. Lateral tufts not red.

- Feet all same colour ♂ and ♀; caudal tuft brown and gold ..... *mariae*. Lutz.
- One tarsal white in hind legs; caudal tuft steel blue and white ..... *portoricensis*. V. Roder.
- All hind tarsals white except a black ring at distal end ..... *herrickii*. Theobald.\*
- A white or golden band on ventral side of mid foot ..... *solstitialis*. Lutz.
- Legs unbanded; caudal tuft brown... *chrysocephala*. Theobald.

Position of *M. grandiosus*, Williston, is uncertain.

**MEGARHINUS FEROX.** Wiedemann (1828).

*Culex ferox*. Wiedemann (1828).

Auss. Zweif. Insek., 1 (1828), Wiedemann; Mono. Culicid. I., 237 (1901); IV., 129 (1907), Theobald; Os Culicideos do Brazil (1908).

Brazil, Columbia.

**MEGARHINUS FLUMINENSIS.** Neiva (in Peryassu) (1908).

Os Culicideos do Brazil, 128 (1908), Peryassu.

Brazil.

*Note*.—Near *ferox*. The tarsi have white bands, and the thorax has the mesonotum in the ♀ of a general green colour, hind region blue and yellow. Lower surface of the abdomen with a central blue line.

The larva figured here is taken from Peryassu's work.

**MEGARHINUS HYPOPTES.** Knab (1907).

Canad. Ent. XXXIX., 50 (1907).

“♂. Head behind the eyes velvety black, the eyes broadly bordered with light metallic blue, beneath and at the sides silvery. Antennae densely plumose; the torali with silvery lustre; second segment long and stout, longer than the three succeeding ones, somewhat compressed laterally, the heavy scaling of the crest condensed to a prominent iridescent blue patch on the anterior portion. Palpi metallic blue and purple, segments two to four lilac at the tip, second and fourth segments nearly equal, the third longer, the fifth twice as long as the fourth. Prothoracic lobes deep metallic blue. Mesothorax greenish black on the disk, with a few coppery scales intermixed, the anterior and posterior margins, an ill-defined median line and patches

\* *Vide Appendix.*

at the middle of the sides metallic blue. Scutellum and post-scutellum bright metallic blue. Pleura and coxae silvery. Abdomen above deep

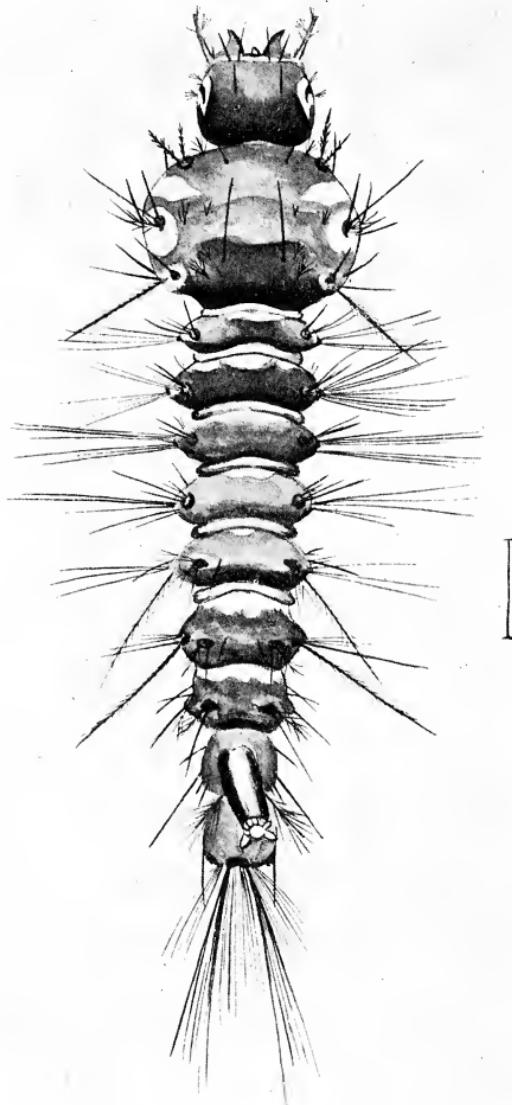


Fig. 35.  
Larva of *Megarhinus fluminensis*. Lutz (after Peryassu).

blue, passing from greenish to a notaceous tinge towards the tip, segments six, seven and eight marked with gold at the hind angles, the seventh with a fine golden hind margin. Claspers violet scaled.

Sixth and seventh segments laterally expanded, reaching their greatest width at the tip of the seventh. No caudal tuft. Lateral abdominal cilia pale on all the segments but the last, dark on the eighth and the genitalia. Abdomen beneath yellowish-silvery with a median stripe. The stripe is widest on the third and fourth segments, and narrows to a fine line on the sixth and seventh. Eighth segment notaceous beneath, tipped with gold. Legs deep violet and blue, the hind tarsi only white-marked. Under surface of the femora bright brassy. On the hind legs the fourth and fifth tarsal joints are silvery white on the outer side, black on the inner.

*Length*—9·5 mm. (exclusive of appendages).

*Locality*.—Bluefields, Nicaragua (W. F. Thornton)."

*Note*.—Evidently very near *M. ferox*, the plain metallic blue scutellum should separate it.—F. V. T.

**MEGARHINUS LONGIPES.** Theobald (1901).

Mono. Culicid. I., 241 (1901), Theobald.

Mexico.

*Type* in the British Museum.

**MEGARHINUS SEPARATUS.** Arribalzaga (1891).

*Megarhina separata.* Arribalzaga (1891).

Dipt. Argentina II., 133 (1901), Arribalzaga; Mono. Culicid. I., 219 (1901); III., 114 (1903); IV., 129 (1907), Theobald; Os Culicideos do Brazil, 135 (1908), Peryassu.

Rio de Janeiro, Amazons, Para, Bahia, São Paulo, Brazil; Bogota, Columbia.

**MEGARHINUS HAEMORRHOIDALIS.** Fabricius (1794).

*Culex haemorrhoidalis.* Fabricius (1794).

Ent. Syst. IV., 401, 5 (1794), Fabricius; Mono. Culicid. I., 222 (1901); III., 114 (1903), Theobald.

South America and West Indies, Mexico; Atoyac, in Vera Cruz; Guiana, Cayenne; Brazil; Cuba (?).

**MEGARHINUS MARIAE.** Lutz (in Bourroul) (1904).

Mosquitos do Brazil, 3 (1904), Bourroul; Os Culicideos do Brazil, 133 (1908), Peryassu; Mono. Culicid. IV., 129 (1909), Theobald.

Bahia, Brazil.

MEGARHINUS PORTORICENSIS. Von Röder (1885).

non Herrick (1905).

*Megarhina portoricensis.* Von Röder (1885).

Ent. Zeit. Stetin., 337 (1885), Von Röder; Mono. Culicid. I., 232 (1901); III., 119 (1903), Theobald.

Georgia, Mississippi, U.S.A., St. Domingo, St. Vincent, Grenada; Para.

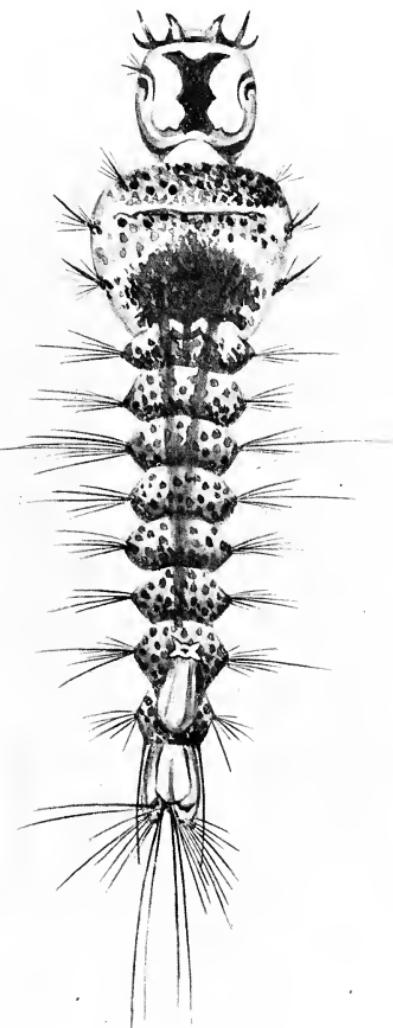


Fig. 36.

Larva of *Megarhinus solstitialis.* Lutz (after Peryassu).

MEGARHINUS HERRICKII. Theobald (1906).

*Megarhinus portoricensis.* Herrick (non Von Röder) (1905).

Entomologist, XXXIX., 241 (1906); Mono. Culicid. IV., 131 (1907), Theobald.

Mississippi, U.S.A.

Type in the British Museum.

MEGARHINUS SOLSTITIALIS. Lutz (1904).

Mosquitos do Brazil, 10 (1904), Lutz (in Bourroul); Mono. Culicid. IV., 133 (1907), Theobald; Os Culicideos do Brazil, 141 (1908), Peryassu.

Rio de Janeiro, São Paulo, Minas Geraes, Brazil.

Larva figured in Peryassu (Fig. 32), and reproduced here.

MEGARHINUS CHRYSOCEPHALUS. Theobald (1907).

Mono. Culicid. IV., 136 (1907), Theobald.

São Paulo, Brazil.

Type in the British Museum.

MEGARHINUS GRANDIOSUS. Williston.

Biol. Cent. Amer. Dipt. 224, Williston; Mono. Culicid. III., 113 (1903), Theobald.

Mexico, Omilteme in Guerrero.

MEGARHINUS RUTILLUS.\* Coquillett.

*Toxorhynchites rutilus.* Coquillett—Theobald (1903).

Canad. Ent. XXVIII., 43 (1896), Coquillett; Mono. Culicid. I., 244 (1901); III., 124 (1903).

Carolina, Florida, Georgia, U.S.A.

Type in National Museum, Washington.

\* The following species have been described by Dyar and Knab in the Smithsonianian Misc. Coll. 50:—

1. *Megarhinus septenstrianalis*, p. 249, from U.S.A. This species they say is the same as my *herricki* (N. York J. Ent. Soc., p. 12).
2. *M. Montezuma*, p. 251, Central America.
3. *M. trinidadensis*, p. 252, Trinidad.
4. *M. haitiensis*, p. 253, S. Domingo.
5. *M. guadeloupensis*, p. 254, W. Indies.
6. *M. superbus*, p. 255, Mexico and Trinidad.
7. *M. lynchii*, p. 244, S. America = *M. haemorrhoidalis*, Lynch.

I have been unable to see the descriptions of these species. The same authors find that Osten Sacken's record of *haemorrhoidalis* from Cuba is in error, and say it is their species *superbus*, Smith Miss. Coll. (Qt. Is.), XLVIII., 255 (1906), and also that *superbus* occurs in Trinidad and Nicaragua. I have not seen the description of *superbus*, so do not know if it is valid and meanwhile retain Osten Sacken's determination.

**GENUS ANKYLORHYNCHUS.** Lutz (in Bourroul).

Mosq. do Brazil, 3 (1904), Lutz (in Bourroul); Mono. Culicid. IV., 127 (1907) Theobald.

Three species occur in this genus and tabulate as follows:—

a. Tarsi of ♀ all the same colour.

- No caudal tuft..... *neglectus*. Lutz.  
Bronzy black caudal tuft ..... *trichopygus*. Wiedemann.

aa. Second and fourth middle tarsals, white below *violaceus*. Wiedemann.

**ANKYLORHYNCHUS NEGLECTUS.** Lutz (1904).

Mosquitos do Brazil, 14 and 65 (1904), Lutz; Mono. Culicid. IV., 127 (1907), Theobald; Os Culicideos do Brazil, 144 (1908), Peryassu.

São Paulo and Rio de Janeiro, Brazil.

**ANKYLORHYNCHUS TRICHOPYGUS.** Wiedemann (1828).

Auss. Zweif. Ins. I., 4 (1828), Wiedemann; Mono. Culicid. I., 243 (1901); III., 114 (1907), Theobald; Os Culicideos do Brazil, 147 (1908), Peryassu.

Santa Catharina, São Paulo, Rio de Janeiro, Brazil.

**ANKYLORHYNCHUS VIOlaceus.** Wiedemann (1821).

*Culex violacea*. Wiedemann (1821).

*Megarhinus purpureus*. Theobald (1901).

*Megarhinus violaceus*. Hoff-Theo (1903).

Dipt. Exot. 7, Wiedemann, 7 (1821); Mono. Culicid. I., p. 230 (1901); III., 117 (1907), Theobald; Os Culicideos do Brazil, 149 (1908), Peryassu.

São Paulo, Rio de Janeiro, Bahia, Minas Geraes, Brazil.

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**GENUS TOXORHYNCHITES.** Theobald (1901).

Mono. Culicid. I., 244 (1901); III., 119 (1903); IV., 140 (1907), Theobald.

The type of this genus is *T. brevipalpis*, Theobald, the essential difference from *Megarhinus* being the short ♀ palpi. They all appear to be of three segments, but from one to three

minute segments are present at the apex in such species as I have had sufficient material to break up. Banks founded his genus *Worcesteria* on the presence of these small apical segments, of which in his species two occur. It is thus evident that Banks' genus must sink, unless we divide *Toxorhynchites* up into several genera on the single character of the number of these minute terminal segments, which lie completely hidden in scales, and which can only be found by careful dissection. Moreover, we should have such closely allied species as *gilesii* and *immisericors* in separate genera if we did so.

The ♀'s tabulate as follows:—

Hind legs—1st two tarsals white, caudal tuft	
white, black, and orange.....	<i>immisericors</i> . Walker.
„ „ Last two tarsals white, no caudal tuft.	<i>leicesteri</i> . Theobald.
„ „ 1st tarsal only white, abdomen green	
with golden yellow lateral spots;	
caudal tuft orange and black, black	
central.....	<i>gilesii</i> . Theobald.
First tarsal white except extreme	
apex.....	<i>argenteotarsus</i> . Ludlow.
„ „ are white band; caudal tuft black with	
white hairs; abdomen metallic green	
in front, blue behind.....	<i>subulifer</i> . Doleschall.
„ „ metatarsi with white basal band, most	
of 1st tarsal white, abdomen violet;	
caudal tuft black .....	<i>phytophygus</i> . n. sp.
„ „ as in above; abdomen azure blue and	
violet; tail tuft black and orange...	<i>marshallii</i> . Theobald.
„ „ base of 1st tarsal only white; abdomen	
metallic blue; caudal tuft white,	
black and orange .....	<i>brevipalpis</i> . Theobald.
„ „ as in above; abdomen metallic blue;	
caudal tuft golden and black .....	<i>speciosa</i> . Skuse.
„ „ unbanded; no caudal tuft .....	<i>metallicus</i> . Leicester.
Legs golden and green, apical joints rich green,	
metatarsi and tarsi partly white; caudal tuft	
golden orange .....	<i>splendens</i> . Wiedemann.
Hind legs with 2nd hind tarsal white; caudal tuft	
black and fibrous; first six abdominal seg-	
ments with a shiny silvery transverse stripe...	<i>christophi</i> . Portshinsky.

Table of ♂'s:—

A. Hind legs unbandied.

No caudal tuft.

Abdomen purple banded with pale blue *leicesterii*. Theobald.

Abdomen rose-purple, basal creamy

yellow bands .....

*metallicus*. Leicester.

Abdomen violet and purple..... *minimus*. Theobald.

B. Hind legs banded.

Caudal tuft present.

- Caudal tuft golden; 2nd hind tarsal nearly all white..... *lutescens*. Theobald.
  - Caudal tuft dark blue; ring of white on 1st hind tarsal (?) metatarsal..... *amboinensis*. Doleschall.
  - Caudal tuft blackish-brown and white; 2nd hind tarsal with pale band..... *lewaldi*. Ludlow.
  - Caudal tuft creamy, black and orange; 1st hind tarsal only white ..... *gilesii*. Theobald.
  - Caudal tuft golden and black; abdomen deep metallic blue; base of hind metatarsi white and all 1st tarsal but apex ..... *speciosa*. Skuse.
  - Caudal tuft white, orange and black ... *immisericors*. Walker.
  - Caudal tuft as above; abdomen basally metallic blue, violet apically; 1st hind tarsal broad white basal band..... *marshallii*. Theobald.
- BB. Legs unbanded..... *inornatus*. Walker.

#### TOXORHYNCHITES IMMISERICORS. Walker (1860).

*Megarhinus immisericors*. Walker (1860).

*Culex regius*. Thwaites (1864).

Journ. Proc. Linn. Soc. Lond., 4, 91 (1860), Walker; Journ. Proc. Linn. Soc. Lond., 8, 102 (1864), Thwaites; Journ. Proc. Linn. Soc. Lond., 9, 7 (1865), Walker; Berl. Ent. Ztschr., 26, 96 (1882), Osten-Sacken (*immisericors* or *amboinensis*); Cat. de toda la Fauna Filip., 2, 490 (1895), Elera; Mono. Culicid. I., 225 (1901), Theobald; idem. III., 123 (1903), Theobald; Gen. Inst. Culicid., 14 (1905), Theobald; Les Moustiq., p. 230 (1905), Blanchard; Spolia. Zeylandica. II., pt. viii., 159 (1905), Green; Philip. Journ. Sc. I., 9, 982 (1906), Banks; Mono. Culicid. IV., p. 141 (1907), Theobald.

♀. Thorax clothed with metallic green and bronze scales, pale apple green and pale blue at the sides in front and up to the base of the wings; pleurae densely silvery white scaled, dark above and below; head with a rich brown tinge in some lights, green in others, paler around the eyes; palpi and proboscis metallic purple and violet, with mauve scales at the apex of the palpi. The ♀ palp has only one small terminal segment.

Abdomen as in the ♂, but the tail tuft more pronounced.

Fore legs with the metatarsals and first tarsal segments creamy white, rest dark; mid legs with the base of the metatarsals creamy white and all the first three tarsals; hind legs with the first two tarsals white.

*Note*.—The ♀ is redescribed here from fresh specimens, as VOL. V.

the specimen in the British Museum was damaged. The ♂ genitalia are here figured by Mr. F. Carter.

On comparing the types I now find *M. gilesii* to be distinct. Doleschall's *M. subulifer* seems distinct.

Travancore, Sikkim, Burma, Malacca, Trincomalee Hot Wells, Ceylon; Macassar, Celebes; Mysor, North Ceram, and Waigiou.

*Additional localities.*—Philippines (Elera and Osten-Sacken)\*; Aijal (3600 ft.), Lushai Hills, Assam. ♀. 24. iv. 04 (in Ind.

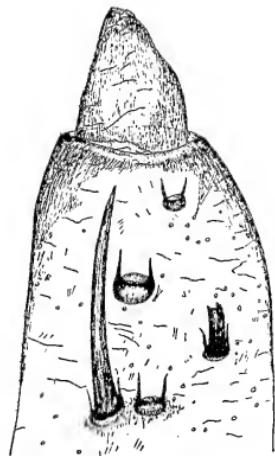


Fig. 37.

*Toxorhynchites immisericors.*  
Walker.

Apex ♀ palpus.

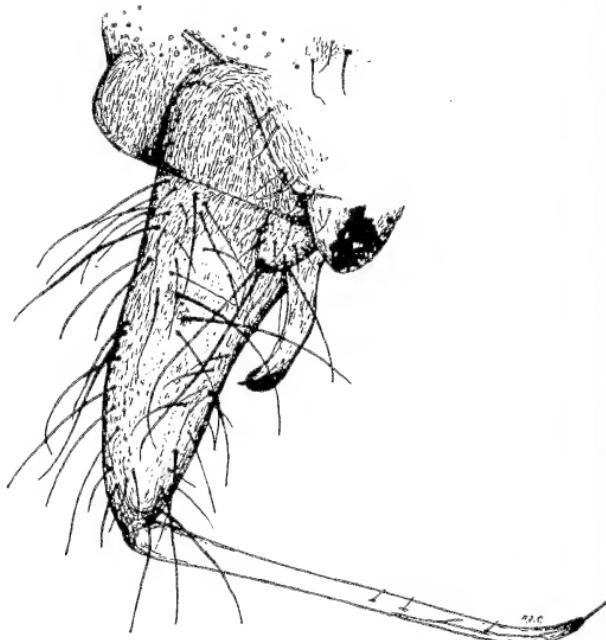


Fig. 38.

*Toxorhynchites immisericors.* Walker.  
Male genitalia (F. Carter).

Mus. Calcutta); Andaman Islands, two ♂'s and one ♀, 19. vi. and 8. vii. 08 (Ray White); Peradeniya, Ceylon, 1600 ft. 24. xii. 07 (Bainbrigge-Fletcher) one ♀; Uva P. Madulsima (T.B.F.) one ♀, 24. xii. 08; Sylhet, Assam, 5. v. 05 (Major Hall); Chittagong, E. Bengal 3. ix. 08 (Major Hall); Calcutta 6, i. 07; 2, 16, 28, 31. vii. 07 (6); 2, 5, 6, 26. viii. 07 (19) (N.A.); also two with labels taken in Zoological Gardens,

\* Osten-Sacken says: "One ♂ determined by Walker as *M. immisericors*, Wlk., although abdomen and legs do not agree with his description. It may be *amboinensis*, Dol., although the agreement is not perfect." Elera merely copies Osten-Sacken, and refers both to the Islands.

Calcutta, 9. vii. and 12. viii. 08 ; Bhim Tal, 4500 ft., Kumaon, 19-22. ix. 06.

*Type* in the British Museum.

**TOXORHYNCHITES LEICESTERII.** Theobald (1904).

The Entomologist, XXXVII., 36 (1904); Mono. Culicid. IV., 142 (1907),  
Theobald.

Kuala Lumpur, Federated Malay States.

*Type* in the British Museum.

**TOXORHYNCHITES GILESII.** Theobald (1901).

Mono. Culicid. I., 227 (1901).

Upper Burmah ; Sikkim ; Ceylon.

*Additional localities.*—Sylhet, Assam (Major Hall) ; Calcutta 1900 one ♀, in Indian Museum, Calcutta ; Singapore (G. A. Finlayson).

*Time of capture.*—7. vi. and 13. vii. 05, Sylhet.

*Note.*—This is quite distinct from *T. immisericors*, Walker, the brilliant bronzy-green abdomen, with traces of blue at once separating it from Walker species and the creamy and almost golden lateral spots in the ♀ are much more marked. The colouring of the legs is difficult to describe as it varies so in different directions of light ; held sideways to the light the fore metatarsi and first tarsals are all creamy white, the greater part of the mid metatarsi and tarsi, and the base of the metatarsal and all the first tarsal segments in the hind legs are duller.

The ♀ palpi figured here by Mr. F. Carter show at once the difference from *immisericors*.

The Singapore specimens were bred from larvae found in a water-but<sup>n</sup>t fairly close to some jungle. The larvae are carnivorous, but made no attempt to eat one another, and no other larvae were found in the tub, although other tubs near swarmed with *Stegomyia*. Mr. Finlayson fed them on other larvae, and found the pupal stage lasted five days.

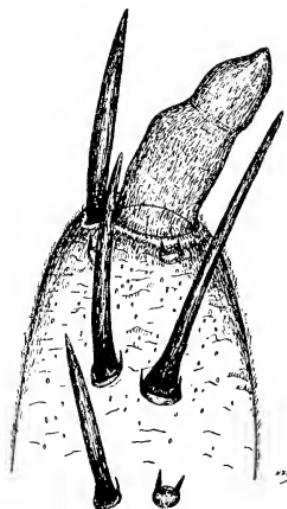


Fig. 39.

♀ palpal apex of *Toxorhynchites gilesii*. Theobald.

TOXORHYNCHITES ARGENTEOTARSIS. Ludlow (1906).

Canad. Ent. XXXVIII., 367 (1906).

"♀. Head densely covered with very dark brown flat scales, with bronze-blue iridescence, a light blue-white band around the eyes, and a few brown bristles, antennae dark brown, the basal joint densely covered with flat white scales; palpi with very dark brown, almost black scales, bronze-blue iridescence, the penultimate and antepenultimate joints with narrow violet apical bands; proboscis very dark, practically black, with bright bronze-blue iridescence; eyes black, clypeus black.

Thorax brown; prothoracic lobes well covered with flat spatulate light greenish-blue, almost white, scales, and a row of brown bristles; mesothorax with bronze-brown spindle-shaped scales on the centre of the dorsum, and a broad border of light blue-green flat spatulate scales running nearly all the way around the mesothorax, the scales just cephalad of the scutellum being also of this character; a bunch of deep orange, or orange-brown bristles over the wing joint, a bare space just dorsal of the pleura extending from the prothoracic lobes to the wing joint; scutellum covered with small flat and long spatulate green-blue scales, and long dark orange-coloured bristles; pleura brown, rather well covered with white scales; metanotum dark brown.

Abdomen dark brown, covered for the most part with blue-green iridescent flat scales. First segment with blue-green median line, and light yellow scales laterally; second, third and fifth segments with large light yellow lateral spots extending well up on the dorsum; on the fourth the lateral spot is not noticeable from a dorsal view; sixth and seventh are more blue than green, and darker than the preceding segments; the sixth with orange, the seventh with black tufts; the eighth segment is nearly purple, and has an orange tuft; venter with light yellow scales laterally, and an irregular median dark blue stripe extending the whole length of the abdomen.

Legs, coxae and trochanters dark, with brilliant light yellow scales; femora of fore legs light-scaled at base, with dark iridescent scales on the dorsal aspect for the distal two-thirds of its length; femora of mid legs dark; femora of hind legs light for the proximal two-thirds, all a yellowish-white beneath; tibiae of fore legs dark dorsally and light below, except the very base and apex, which are a brilliant golden-yellow; tibiae

of mid-legs mostly golden yellow, darker near the base, and a band of dark scales at the apex; tibiae of hind legs dark blue, with green iridescence; metatarsi of fore legs nearly white, except a small basal spot of dark blue on the under surface; of mid leg nearly white, except a rather dark spot on the dorsal surface; of hind legs dark blue, except a light basal band; first tarsal of fore leg is white, except an apical dark band, all the remaining joints dark; first tarsal on mid leg and all the following are light yellow to white, except the last, which has a brown tip; first tarsal of hind legs is light, with a tiny dark apex, all the rest of the joints dark. Ungues simple and equal. In some lights there is a very narrow apical band of violet on all the femora, and on the mid and hind tibiae reddish.

Wing clear reddish-brown, sparsely scaled with brown, broadly truncate scales; first submarginal cell very short, very little more than half the length of the second posterior, and much narrower; mid and posterior cross-veins meet, and are about the same length; supernumerary cross-vein about half the length of mid, and three times its own length exterior to mid. Halteres orange-brown.

There is a strong fold near fifth long vein, so that it makes a curvature in the margin of the wing.

*Length.*—12 mm.

*Habitat.*—Margosatubig, Mindanao, Philippine Islands.

Taken June and July.

Described from five specimens sent by Dr. H. Newton Kierulf, Cont. Surg. U.S. Army, and evidently lies near *speciosus*, Skuse, and *Marshallii*, Theob., and may easily be the female of a species in which only the male has been known, but at all events it is sufficiently unlike such descriptions as I have been able to find to warrant my assuming it to be new."

#### TOXORHYNCHITES SUBULIFER. Doleschall (1857).

*Megarhinus subulifer.* Doleschall (1857). ♀.

Nat. Tijdschr. v. Ned. Indie. XIV., 382 (1857), Doleschall; Mono. Culicid. I., 242 (1901), Theobald.

Amboina.

Ludlow's *lewaldi* is near this, but the unbanded fore legs separate it. Doleschall's species is clearly distinct from Walker's *immisericors*, but I have been unable to obtain any Amboina mosquitoes.

## TOXORHYNCHITES PHYTOPHYGUS. nov. sp.

Head black with deep green and azure blue scales ; palpi and proboscis black, the former violet at the apex and with a narrow violet band below ; antennae brown, basal segment with brown and grey scales. Thorax black with bronzy and green scales, and a bright azure blue patch over the roots of the wings ; scutellum and basal segment of the abdomen bright green. Abdomen bright violet with basal lateral creamy patches, creamy lateral hairs, two black lateral tufts apically and golden orange ones at the apex. Pleurae dark with silvery scales. First and second tarsals of the fore legs and the base of the third tarsi white in mid legs, also the base of the metatarsi ; hind legs with a white band at the base of the metatarsi and most of the first tarsal white, rest of legs violet and black, except the femora, which are golden ventrally.

♀. Head black (partly denuded) but with traces of green, bronzy, and azure blue flat scales and black chaetae ; clypeus black ; palpi bronzy, clothed with black scales, those at the apex violet, a few bright coppery and a narrow band of violet ones at the apex of the penultimate segment ; proboscis clothed with black scales with violet reflections in the middle ; antennae dark brown, basal segment black with grey sheen and some flat white and ochreous scales and short chaetae, second segment with flat black scales on its basal half.

Thorax black with coppery and green scales, becoming broad scales in front of the scutellum, green and azure blue and bronzy, a distinct patch of apple green and azure blue large flat scales over the roots of the wings, and long, thick black chaetae ; prothoracic lobes with flat azure blue and bright violet scales (the colours from these are so bright they are reflected in certain lights on to the front scales of the mesonotum) ; scutellum with large, brilliant apple green scales on the lateral lobes, smaller apple green scales with blue bases on the mid lobe ; pleurae dark brown with a dense coating of flat, silvery white scales, especially posteriorly.

Abdomen with the basal segment clothed with green, pale coppery, yellow, mauve, and azure blue scales, the first predominating ; remaining segments with brilliant violet scales and basal lateral creamy patches ; laterally are pale creamy hairs, except on the sixth and seventh segments, where they are black, forming a tail-tuft, the apical segment with brilliant coppery

scales and golden-orange hairs; venter dark with pale median areas. Legs deep ochreous, clothed with black scales with violet reflections, the first and second fore tarsals white; the first, second, and third in the mid legs, also the base of the metatarsi; in the hind legs the base of the metatarsi are faintly white, and the greater part of the first tarsal. Wings normal, the supernumerary a long way in front of the mid cross-vein; the posterior much longer than the mid, a little nearer the apex of the wing and sloping backwards.

*Length*.—8 mm.

*Habitat*.—Obuasi, Ashanti (Dr. Graham).

*Time of capture*.—20. vi. 07.

*Observations*.—Described from a single female, perfect except that the head is rubbed. It is near *T. marshallii*, but can at once be told by the marked leg banding, by the more violet abdomen, the latter being coppery at the apex.

Taken by Dr. Graham upon the flowers of a climbing plant on the edge of the railroad, about a mile north of Obuasi. Only seen before 9 A.M.

*Type* in the British Museum.

**TOXORHYNCHITES BREVIPALPIS.** Theobald (1901).

Mono. Culicid. I., 245 (1901).

Natal.

*Type* in the British Museum.

**TOXORHYNCHITES MARSHALLII.** Theobald (1903).

Mono. Culicid. III., 121 (1903) ( $\delta$ ), Theobald; Anns. Trop. Med. and Parasit. I., No. 1, 11 (1907) ( $\varphi$ ), Newstead.

Newstead describes the  $\varphi$  as follows:—"Head scales bronzy blue at the sides and between the eyes, bronzy-green on occiput, black along the nape. Palpi of four segments; sub-apical and apical segments minute, clothed with brilliant azure blue scales. Antennae black; the first segment black at the base dorsally, grey at the apex with a patch of dull white scales; pubescence grey, hairs black. Proboscis azure blue. Thorax—prothoracic lobes dull azure-blue, with bronzy-green reflections; mesonotum black with brilliant bronzy-green scales; scutellar scales rich bronzy-yellow; and there are patches of the same coloured scales near the base of the wings; pleurae almost covered with dull white scales.

Abdomen azure-blue with rich violet reflections; penulti-

mate segment with brilliant ruby reflections; anterior half of anal tuft black, the rest rich orange; there are white lateral spots to first, second, third and fifth segments; venter blue with white scales on the fifth segment.

Legs dark violet; coxae with some white scales; mid and hind femora dull bronzy-yellow beneath with white reflections in some lights, and in the hind tibiae this colour extends to the upper surface on the inside; first segment of mid and hind tarsi with a dusky white band; second segment almost entirely white forming

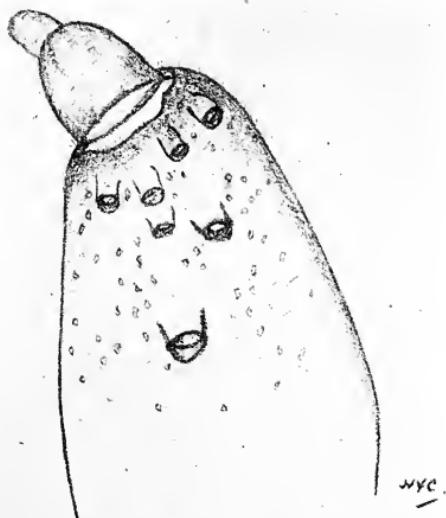


Fig. 40.  
Apex of ♀ palp of *Toxorhynchites marshallii*. Theobald.

a distinct broad band; second tarsal segment to fore legs with an inconspicuous basal band of dusky white scales; fore, mid and hind unguis equal and simple.

*Length.*—9 to 10 mm., exclusive of the proboscis."

*Additional localities.*—Tshumbiri and Coquilhatville, Congo Free State (Rev. and Mrs. Billington); Obuasi (Graham), one ♀ and two ♂'s.

*Time of capture.*—March, April, June and November in the Congo Free State, and June, Obuasi.

*Observations.*—Newstead records the following supplied by

the collectors in the Congo Free State : "The adults fly with a characteristic loud humming ; they were frequently caught in an European house. The larvae were found in a metal water tank."

Graham took this species in the hospital ward, Obuasi, on a window at 5 P.M., and also on an umbelliferous flower in the bush at 12 noon ( $\delta$ 's). Dr. Graham says : "Specimens were taken upon several occasions upon the flower of a climbing plant at the edge of the railroad, about one mile north of Obuasi, only before 9 A.M., and only in June ;" but on the specimens were the notes 12 noon, and the  $\varphi$  5 P.M. in the hospital.

The female is like the male in all respects, but the tail-tuft is not so large, and the two pale bands on the hind legs are more prominent.

The  $\varphi$  palp and  $\delta$  genitalia figured here were drawn and

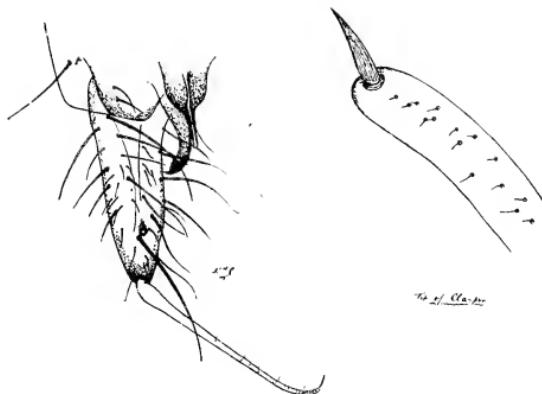


Fig. 41.

*Toxorhynchites marshallii*. Theobald.

Male genitalia. Tip of clasper still further enlarged.

prepared by Mr. F. Carter. The former at once show the difference from *immisericors*.

*Notes on the blue mosquito*.—Mrs. Billington sends me the following notes made on this insect in the Congo Free State :—"July 6th, 1904. Caught a blue mosquito in the bath-room about 3 P.M. Put it in a specimen glass with three inches of water in the bottom. Tied strong mosquito netting over the top, put in a piece of swamp moss (stag's horn) and swamp fern, and two stems of swamp grass. In the evening mosquito had settled on the water. Gave it a bit of banana on top of netting, from which it appeared to eat.

"July 7th. Found mosquito lying on water on its side, and also a small brown thing on surface of water about size of the

head of a pin. Lifted mosquito on to grass and put more banana on top of netting. Evening, four more tiny brown things appear to hang by points from surface of water at side of specimen glass.

"July 10th. Three little larvae, nearly white, swimming up and down with a very jerky motion, occasionally going to the top, apparently tail end uppermost. Four light brown (fawn) eggs still hanging suspended from surface of water, not at sides of glass.

"July 11th. Took remains of mosquito out last evening. Tried to secure an egg to put in spirits, but failed. Larvae to-day seem almost transparent in sunlight, and one does not see them until they move. Movement very jerky, head first in one direction, then the opposite. They seem to breathe at surface, tails uppermost. Magnifying glass shows some dark marks near heads and tails. Appear to swim backwards in circles, first one side, then the other.

"July 12th. At least three larvae quite lively, and a little more easily seen by the naked eye. Put glass in sun. A good deal of evaporation on sides of glass. Too hot for larvae.

"July 21st, 1904. 10 A.M. Found male peacock-blue mosquito in drum in garden. Mosquito netting thrown over drum a day or two before Dr. Dutton came, and has not been off since, so far as I know. He came July 2nd, consequently the egg from which this mosquito was hatched must have been laid at least three weeks ago. I have only looked at the drum a few times since the doctors were here, and only saw larvae when I looked. I heard the mosquito sing as soon as I went near the drum to-day. There were several larvae left in the water, larger and with more distinct marks than those hatched in the specimen glass, and larger heads. 2 P.M. Looked for skin of pupa, and found it just at surface of water attached to the side of the drum. Bottled it, and also a middle-sized larva. They seem to have the same kind of movement as those in specimen glass.

"July 27th. Bottled two larger larvae to-day. One appears lighter than the other. I fancy the darker one is of a smaller kind of mosquito, perhaps *Stegomyia*, of which I think one escaped the day I found the male blue mosquito. Saw one small pupa in the drum to-day.

"Oct. and Nov. Caught some blue mosquitoes in dining-room, bedroom, study, visitors' room.

"Nov. 22nd, 1904. Two big larvae from drum.

" Nov. 23rd. One dropped skin and became a pupa. )

" Nov. 27, Sunday, 2.10. Blue mosquito in bedroom. Caught it in test tube, put it in a tumbler of water, with mosquito netting over (water from drum in garden where they have been breeding).

" I have two large larvae in another glass of water from the same drum (from which I took the larvae on Nov. 22nd). I put away some of their water and add more from drum each day. They seem more active after getting their fresh water.

" Nov. 28th. On the top of the mosquito's tumbler of water are fourteen little yellow things (? eggs).

" Nov. 29th. One or two eggs hatched out.

" Nov. 30th. More eggs hatched out. Little white larvae swimming about.

" Dec. 5th. Big pupa has become a big blue mosquito, *and a male.*

" Jan. 13th. Put large larva in spirit-bottle. Does not appear to have grown since Nov. 22nd, when I put it in tumbler, but is apparently the last I can get. All the drum family appear to have died. Water has risen in drum much higher than usual and reached a rusty part. Perhaps rusty scum on top of water has killed them all.

" Tuesday, Dec. 3rd, 1907. Just before 11.30 A.M. was typing in visitors' room, and heard a blue mosquito singing. Caught it in test tube and put it into specimen glass three-parts full of water, in which some flowers had been. Tied a bit of old canvas over, with two stalks of swamp grass through it. Almost immediately mosquito went close to water and lodged itself by grass and glass, and laid a tiny white egg, just a speck. Put a scrap of banana skin on the canvas.

" Thursday, Dec. 5th, 8.30 A.M. Seven or eight little oval-shaped, fawn-coloured things appear to hang from the surface of water near together, but quite separate, say within quarter square inch. Mosquito down in water. Gave it a fine stalk of grass, and it raised itself. Looking again by better light, I see there are perhaps twenty eggs, many close to the glass. All appear to hang from surface of water.

" Friday, Dec. 6th. Mosquito on its back in water. Took it out in test tube. Eggs still hang as yesterday.

" Saturday, Dec. 7th. Instead of some of the eggs floating, tiny specks of white are wriggling in the water, no larger than a bit of fine cotton, and no longer than the width of a pin's head,

i.e., about twice the length of the eggs still floating at the surface of the water. Sometimes these little larvae seem to hang from the surface of the water tail upwards, close to the remaining eggs.

"Sunday, Dec. 8th. Two or three *tiny* larvae, look almost as fine as a spider's web. Gave them a fresh stalk of swamp grass. They seemed to get round it at once.

"Monday, Dec. 9th. Some larvae seem to be growing a little in girth. Egg shells all appear empty. Larvae are darker at their heads and tails, and also at a short distance from their heads. The rest of the body is white, almost transparent."

**TOXORHYNCHITES SPECIOSA.** Skuse (1888).

*Megarhinus speciosus.* Skuse (1888).

Proc. Linn. Soc. N.S. Wales, 1722 (1888), Skuse; Mono. Culicid. I., 228 (1901); III., 124 (1903); Anns. Queensland Mus., No. 8, 16 (1908), Bancroft.

Port Denison, Mackay, Queensland.

*Additional localities.*—Port Darwin and Kuranda (Fred Dodd); Thursday Island (Mrs. Eyre); North Percy Island (Mr. Tryon); in many scrubs from Cabooltrae to Moreton Bay and Enoggera (Dr. Bancroft).

*Notes.*—Dr. Bancroft says the following regarding this beautiful species: "It is not a biting mosquito. To obtain good specimens it is advisable to hatch out the larvae, which may be found in scrubs, in crevices in trees holding a pint or so of water. The larvae are red in colour, very large and voracious, devouring other mosquito larvae found in similar situations, e.g., those of *Scutomyia notoscripta* and *Culex occidentalis*. They are to be found occasionally in water-butts, about habitations situated near jungles or scrubs. I have obtained them by hanging up or nailing to trees large jam-tins filled with water and rotten leaves. The eggs are laid singly."

**TOXORHYNCHITES METALLICUS.** Leicester (1904).

The Entomologist, XXXVII., 37 (1904), Leicester; Mono. Culicid. IV., 144 (1907), Theobald.

Kuala Lumpur, Federated Malay States.

Type in the British Museum

MEGARHINUS (?) SPLENDENS. Wiedemann (1819).<sup>1)</sup>

*Culex splendens.* Wiedemann (1819).

Zoologisches Magazin 2, I. (1819), and Dipt. Exot. 7, Weidemann (1828); Mono. Culicid. I., 235 (1901), Theobald.

Java, Sumatra, Batavia, Singapore.

I have examined two old and damaged ♂'s from Surinam in the Amsterdam Museum. If they are not varieties of this species they must form a new species, but they answer closely to it. The large orange tail tuft is very marked.

TOXORHYNCHITES (?) CHRISTOPHI. Portshinsky (1883).

*Megarhinus christophii.* Portshinsky (1883).

Horae. Soc. Ent. Rossicae, 122 (1883), Portshinsky; Mono. Culicid. I., 243 (1901), Theobald.

Amur, Central Asia.

TOXORHYNCHITES (?) MINIMUS. Theobald (1905). ♂.

*Megarhinus minimus.* Theobald (1905).

Journ. Bombay Nat. Hist. Soc. XVI., 237 (1905); Mono. Culicid. IV., 138 (1907), Theobald.

Yatiyantota, Ceylon (E. E. Green).

This may come in either *Megarhinus* or *Toxorhynchites*. Probably the latter genus.

Type in the British Museum.

TOXORHYNCHITES (?) LUTESCENS. Theobald (1901).

*Megarhinus lutescens.* Theobald (1901).

Mono. Culicid. I., 233 (1901), Theobald.

Salisbury, Mashonaland.

Type in the British Museum.

TOXORHYNCHITES ? AMBOINENSIS. Doleschall (1857).

*Megarhinus amboinensis.* Doleschall (1857).

Natuur. Tijdschrift voor Ned. Indie. XIV., 381 (1857), Doleschall; Berliner Ent. Ztschr. 26, 96 (1882), Osten-Sacken; Cat. de Toda la Fauna Filip. 2, 490 (1895), Elera; Philip. Journ. Sci. 1, 9, 912 (1906), Banks; Mono. Culicid. I. 243 (1901), Theobald; Gen. Ins. Culicid. 13 (1905), Theobald.

Amboina.

Notes.—Osten-Sacken says this may be *T. immisericors*,

Walker<sup>1</sup> but I feel sure it is distinct from the description of the male. Elera records it from the Philippines and gives it as distinct. Banks makes no further reference to it in his paper of 1906.

It may be a *Toxorhynchites*. No female is known.

**TOXORHYNCHITES (?) LEWALDII.** Ludlow (1904).

*Megarhinus waldi.* Blanchard (1905).

Canad. Ent. XXXVI., 233 (1904), Ludlow; Les Moust. 625 (1905), Blanchard; Philip. Journ. Sci., I., 9, 982 (1906), Banks; Mono. Culicid. IV. (1907), Theobald; Mosq. Philip. Isl. 10 (1900), Ludlow.

Philippine Islands.

**TOXORHYNCHITES INORNATUS.** Walker (1865).

*Megarhinus inornatus.* Walker (1865).

Proc. Linn. Soc. Lond. VIII., 102 (1865), Walker ♂; Mono. Culicid. I., 223 (1901), Theobald. ♀.

New Guinea.

*Types* ♂ and ♀ in the British Museum.

I have been unable to obtain the description of the following species:—

**TOXORHYNCHITES COURADTI.** Grünberg (1907).

D. Ent. Zs. 405 (1907).

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**GENUS WORCESTERIA.** Banks (1906).

Philippine Journal of Science, I., 7, p. 779 (1906).

This genus was separated by Banks from *Toxorhynchites*, Theobald, owing to the fact that the female palpi are 5-jointed, not 3-jointed. The two apical segments are very minute, and cannot be detected except by a microscopic preparation. The male palpi are long and acuminate and composed of four segments, but the basal one is incomplete as in *Culex*.

In view of the fact that other *Toxorhynchites* show 1 to 3 minute terminal segments, this genus will not stand and must sink as a synonym of *Toxorhynchites*.

## WORCESTERIA GRATA. Banks (1906).

Philippine Journal of Science, I., 7, p. 780 (1906).

Mr. Banks sent me a specimen of this, which has unfortunately been lost. But a query note says, "the same as *Toxorhynchites immisericors*, Walker."

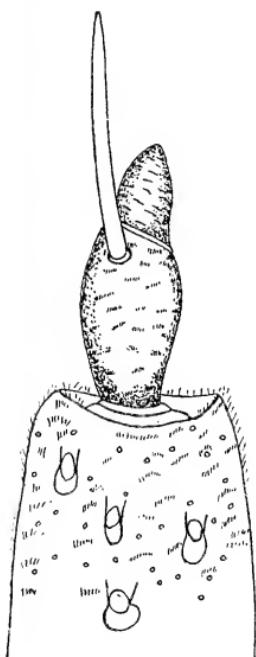


Fig. 42.

*Worcesteria grata*. Banks.  
Apex ♀ palpi (after Banks).

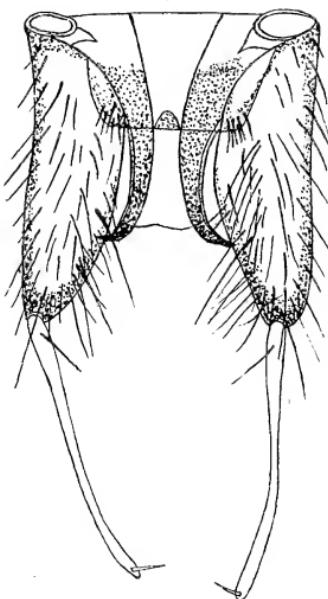


Fig. 43.

*Worcesteria grata*. Banks.  
♂ genitalia (after Banks).

A comparison with the ♀ palp of *immisericors* (Fig. 37, p. 98) at once shows it to be distinct.

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## ORTHORHYNCHAE.

## METANOTOPSILAE.

(Metanotum nude.)

See p. 554.

## METANOTOPSILAE-HETEROPALPAE.

See p. 482.

SUB-FAMILY **CULICINAE.** THEOBALD.

## TABLE OF GENERA.

- I. Eyes and scutellum normal.
- A. Legs ornamented with dense outstanding scales.
- α.* Head clothed with spindle-shaped and broad curved scales.
  - β.* Hind legs only densely scaled...Genus 1 *JANTHINOSOMA.* Arribalzaga.
  - ββ.* All the legs more or less densely scaled.
    - Wing scales rather thin .....Genus 2 *PSOROPHORA.* Robineau-Desvoidy.
    - Wing scales large inflated, parti-coloured. Body and head with very long twisted scales ...Genus 3 *MUCIDUS.* Theobald.
- B. Legs normal, no irregular scales.
- α.* Head clothed with flat and upright forked scales only.
  - β.* Scutellum with flat scales.
    - Small flat scales on the mesonotum before scutellum .....Genus 4 *QUASISTEGOMYIA.* Theobald.
    - Flat scales as lateral patches also...
      - Genus 5 *KINGIA.* nov. gen.
- No flat scales on mesonotum.
- Male palpi long, thin, nude and acuminate. Large.....Genus 6 *DESVOIDYA.* Blanchard.
  - Flat scales over the wing roots; proboscis very short and thick, bent twice; mid unguis of ♂ equal.....
    - Genus 7 *BREVIRHYNCHUS.* Theobald.
  - Male palpi thin, acuminate or clavate, hairy. Small.....Genus 8 *STEGOMYIA.* Theobald.
  - Ventral abdominal scale tufts.....
    - Genus 9 *PSEUDOCARROLLIA.* Theobald.

- ββ.* Scutellum with narrow-curved scales.  
 Palpi of ♂ acuminate ..... Genus 10 *PSEUDOSKUSEA*. Theobald.  
 Palpi of ♂ clavate..... Genus 11 *LUDLOWIA*. Theobald.  
 Palpi of ♂ clavate, marginal cell much contracted posteriorly. Shiny.....  
 Genus 12 *RADIOCULEX*. Theobald.

*βββ.* Scutellum with flat scales at the base of the mid lobe, narrow-curved at the border and a few on the lateral lobes.  
 Legs very shiny..... Genus 13 *CHAETOCRUIOMYIA*. nov. gen.

*αα.* Head clothed with mostly flat scales but also with small areas of narrow-curved scales and upright forked ones.  
*γ.* Scutellum with all flat scales.  
*δ.* Palpi of ♀ very short.  
 Head with a median row of narrow-curved scales...Genus 14 *SCUTOMYIA*. Theobald.  
 Head with narrow-curved scales behind..... Genus 15 *ÆDIMORPHUS*. Theobald.  
 Apex of abdomen very bristly ; ♂ palpi two-thirds the length of the proboscis. No hair tufts..... Genus 16 *RACHISOURA*. nov. gen.  
 Apex of abdomen very bristly ; ♂ palpi smaller ; wing scales straight linear and narrow spatulate..... Genus 17 *MIMETEOMYIA*. nov. gen.

*δδ.* Palpi of ♀ half length of proboscis.  
 Head with flat scales except for some spindle-shaped ones around the eyes..... Genus 18 *LEICESTERIA*. Theobald.  
 As above, but a row of narrow-curved scales bordering eyes  
 Genus 19 *DUTTONIA*. Newstead.

*γγ.* Scutellum with flat scales to mid lobe, narrow-curved ones to lateral lobes.  
 Head with flat scales, narrow-curved ones in median area...  
 Genus 20 *MACLEAYA*. Theobald.  
 Head with all flat scales except for a median basal area.....  
 Genus 21 *CARROLLIA*. Lutz.

*γγγ.* Scutellum with flat scales on each lobe separated by narrow-curved ones, an apical border of narrow-curved scales ..... Genus 22 *POPEA*. Ludlow.

- \yyyy. Scutellum with flat and narrow-curved scales, none along apical border ..... Genus 23 HOWARDINA. Theobald.
- yyyyy. Scutellum with large spindle-shaped scales..... Genus 24 HULECOETEOMYIA. Theobald.
- yyyyyy. Scutellum with small flat scales on mid lobe, narrow-curved ones on lateral lobes..... Genus 25 PHAGOMYIA. Theobald.
- Scutellum with small narrow flat scales on mid lobe, narrow-curved ones over back sides and border; lateral lobes with large narrow-curved scales. Wing scales *Taeniorhynchus*-like ..... Genus 26 MYXOSQUAMUS. Theobald.
- yyyyyyy. Scutellum with spindle-shaped scales on mid lobe, flat ones on lateral lobes ..... Genus 27 POLYLEPTIOMYIA. Theobald.
- yyyyyyyy. Scutellum with narrow-curved scales all over.
- ♂. Head with flat scales except for a median triangular narrow-curved scale area..... Genus 28 PSEUDOHOWARDINA. Theobald.
- ♂♂. Flat scales spread around the eyes
- Genus 29 CULICIOMYIA. Theobald.
- Flat scales loose; ♂ palpi no hair tuft; shorter than proboscis
- Genus 30 EUMELANOMYIA. nov. gen.
- ♂♂♂. Head with only a double row of narrow-curved median scales ...
- Genus 31 NEOMACLEAYA. Theobald.
- ♂♂♂♂. Head with all flat scales except along the nape..... Genus 32 DANIELSIA. Theobald.\*  
Prothoracic lobes all with thick chaetae; fork cells small.....  
Genus 33 HISPIDIMYIA. nov. gen.
- ♂♂♂♂♂. Head with narrow-curved scales around the eyes ..... Genus 34 LEPIDOTOMYIA. Theobald.
- ♂♂♂♂♂♂. Head with narrow-curved scales behind ..... Genus 35 GNOPHODROMYIA. Theobald.

\* The genus *Gualteria* Lutz comes in near here (*vide* Appendix).

- aaa.* Head clothed with mostly narrow-curved scales and upright forked ones, flat only at the sides as in *Culex*.  
 Scutellum with flat median and narrow-curved lateral scales .....  
 Genus 36 PROTOMACLEAYA. Theobald.  
 Scutellum with all flat scales.....  
 Genus 37 REEDOMYIA. Ludlow.  
 Scutellum with mixed narrow-curved and small flat scales to mid lobe, long, flat and narrow-curved ones to lateral lobes.....  
 Genus 38 PECOMYIA. Theobald.  
 Scutellum with all flat scales, but a broad apical area to the mid lobe and some scattered ones on the lateral lobes .....Genus 39 NEOPECOMYIA. nov. gen.  
 Mid lobe of scutellum with broad-curved scales, lateral lobes with flat and narrow-curved ones .....  
 Genus 40 STENOSCUS. nov. gen.  
 Scutellum with narrow-curved scales; first posterior cell uniform in breadth .....Genus 41 BATHOSOMYIA. nov. gen.  
*aaaa.* Head with loose irregular flat scales and narrow-curved ones behind.  
 Scutellum with flat median scales and narrow-curved lateral ones...  
 Genus 42 CATAGEIOMYIA. Theobald.  
*aaaaaa.* Head with broad flat spindle-shaped scales. Scutellum with small flat scales.  
 Vein scales of *Taeniorhynchus* type  
 Genus 43 GILESIA. Theobald.  
 Antennae densely hairy...Genus 44 TRICHLORHYNCHUS. Theobald.  
*aaaaaaa.* Head with broad narrow-curved scales; scutellum with flat scales; ♂ palpi clavate, wings spotted.....Genus 45 PSEUDOTHEOBALDIA. Theobald.  
 Scutellum with broad spindle-shaped scales.....Genus 46 MAILLOTIA. Theobald.  
*aaaaaaa.* Head and scutellar scales narrow-curved only, except at the sides of the head where they are flat.  
 ♂. Abdomen clothed with flat scales only.  
 I. Legs uniform, femora not enlarged at all.

- Palpi of ♂ clavate. Wings with lanceolate scales united into spots ..... Genus 47 THEOBALDIA. Neveu-Lemaire.
- Wing scales scanty; wing membrane stained ..... Genus 48 PARDOMYIA. Theobald.
- Wing scales pear-shaped and spatulate; fork-cells short ..... Genus 49 MEGACULEX. Theobald.
- Wings with rather thick median scales and short broadish lateral ones. Fork-cells small; scales mottled.
- Head with broad narrow-curved scales and forked ones.
- Scutellum with narrow-curved scales ..... Genus 50 GRABHAMIA. Theobald.
- With mostly small flat scales on the scutellum, a few narrow-curved ones on posterior border of mid lobe ..... Genus 51 PSEUDOGRABHAMIA. Theobald.
- Head with irregular flat scales dotted all over giving a ragged appearance ..... Genus 52 ACARTOMYIA. Theobald.
- Posterior cross-vein slopes prominently in basal direction, and median vein scales large and spatulate ..... Genus 53 APOROCULEX. Theobald.
- Palpi of ♂ acuminate. Wings ornamented with various coloured patches. Scales partly *Culex*-like partly *Taeniorhynchus*-like ..... Genus 54 LUTZIA. Theobald.
- Wings with dense linear scales; fork cells short ..... Genus 55 CULICADA. Felt.
- Wings with broadish lateral vein scales, median large and spatulate. Front area of thorax silvery-grey scaled ..... Genus 56 LEUCOMYIA. Theobald.
- Fork cells short, but vein scales broader than in *Culex* ..... Genus 57 CULICELSA. Felt.
- Wings with narrow linear or lanceolate scales.
- Fork cells long in the ♀. Costa not markedly spinose ..... Genus 58 CULEX. Linnaeus.
- Costa spinose; ♂ palpi bluntly acuminate ..... Genus 59 MICROCULEX. Theobald.
- Wing scales broader than in *Culex*; ♂ palpi plumose ..... Genus 60 PROTOCULEX. Felt.

- ♀ palpi longer than in *Culex*,  
scales on the basal and 2nd  
antennal segments, ♂ palpi  
enlarged apically dense hair  
tufts; of 3 segments...Genus 61 BANKSINELLA. Theobald.
- ♂ palpi two segments...Genus 62 MIMETECULEX. Theo-  
bald.
- Male antennae with special  
organs.....Genus 63 LOPHOCERATOMYIA.  
Theobald.
- Proboscis hairy in the middle ...  
Genus 64 TRICHOPRONOMYIA. Theo-  
bald.
- Male palpi with an outstanding  
line of scales .....Genus 65 PRETINOPALPUS. nov.  
gen.
- Wings with elongated broadish  
scales. Fork-cells long. Brown  
species. Proboscis banded.....  
Genus 66 TAENIORHYNCHUS. Arri-  
balzaga.
- Golden, yellow and purple species  
Genus 67 CHRYSOCONOPS. Goeldi.
- Wings with large broad and  
asymmetrical scales. Scutellar  
scales narrow-curved Genus 68 MANSONIA. Blanchard.  
Scutellar scales flat.....Genus 69 MANSONIOIDES. Theo-  
bald.
- Wing scales large and fan-shaped  
Genus 70 LEPIDOPLATYS. Co-  
quillett.
- Wing scales heart-shaped .....,  
Genus 71 ETORLEPTIOMYIA. Theo-  
bald.
- II. Femora and tibiae swollen  
apically and basally.  
Wing scales small, dense and  
broad at the apices of the veins.  
Small black gnats ...Genus 72 MELANOCONION. Theo-  
bald.
- Wing scales longer and *Taenior-*  
*hynchus*-like .....Genus 73 NEOMELANOCONION.  
Theobald.
- Similar, but ♂ palpi shorter than  
proboscis .....Genus 74 PROTOMELANOCONION.  
nov. gen.
- ♂♂. Abdomen with large flat projecting  
lateral scales, with deeply dentate  
apices, in more or less dense tufts.  
Wing scales of *Culex* type .....,  
Genus 75 LASIOCONOPS. Theobald.

- δδδ. Abdomen with scaly ventral tufts.  
 Wing scales pyriform, dense and  
 mottled ..... Genus 76 *FINLAYA*. Theobald.  
 Scutellum nude except for two  
 lines of scales.  
 Head with small flat scales, with  
 a median line of narrow-curved  
 ones.  
 Thorax mostly nude; scales on  
 scutellum long and thin .....  
 Genus 77 *BANCROFTIA*. Lutz.  
 Head with broad, short curved  
 scales, those at sides broader  
 and flatter but not spatulate;  
 scutellar scales broadish .....  
 Genus 78 *PNEUMACULEX*. Dyar.  
 Near *Finlaya* but with mid-  
 ventral abdominal scale tufts...  
 Genus 79 *ORTHOPODOMYIA*. Theo-  
 bald.  
 Near *Orthopodomyia* but ♂ palpi  
 longer, *Mansonia*-like scales on  
 the wings and very long scales  
 on the ♂ antennae ... Genus 80 *NEWSTEADINA*. Theobald.  
 II. Eyes very large, completely fused in middle  
 line; scutellum narrow scales... Genus 81 *OCULEOMYIA*. Theobald.  
 Scutellum with flat scales Genus 82 *MOLPEMYIA*. nov. gen.  
 III. Eyes small; scutellum with a large back-  
 wardly projecting process ..... Genus 83 *RACHIONOTOMYIA*. Theo-  
 bald.
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### GENUS **JANTHINOSOMA**. Arribalzaga (1891).

*Conchyliastes*. Morgan, Howard, Coquillett (Theo-  
 bald, MS. only).

Dipt. Argentina, 52 (1891), Arribalzaga; Mono. Culicid. I., 253 (1901);  
 III., 124 (1903); IV., 152 (1907), Theobald; Os Culicideos do Brazil,  
 151 (1908), Peryassu.

Seventeen species have been described in this genus, all from  
 N. and S. America and the West Indies, etc. I have only seen  
 eight. An eighteenth species (*echinata*), described by Grabham,  
 is recorded at the end of the genus.

Dyar and Knab place *Culex albifarsis*, Neveu-Lemaire (non  
 Theobald), in this genus, kindly renaming it *Janthinosoma vanhalli*

(Proc. Biol. Soc. Wash. Nov. 06). The species described by Dyar and Knab are given in the Appendix.

The species I have seen tabulate as below :—

I. Last two hind tarsals all white.

Head honey yellow.

- Thorax with scattered yellow and bronze scales; white spreads on to second tarsal ..... *sayi*. Theobald.  
white not spreading on to second segment ..... *sayi* var. *jamaicensis*.  
Theobald.

Head golden, purple at sides.

- Thorax with a broad yellow scaled area on each side ..... *lutzii*. Theobald.  
Thorax with creamy lateral scales ..... *albipes*. Theobald.  
Thorax wholly bronzy and yellow scaled *coquillettii*. n. sp.

II. Last hind tarsal white.

- Thorax with scattered bronzy and yellow scales ..... *posticata*. Wiedemann.  
Thorax yellow ..... *varipes*. Coquillett.

III. Hind feet with four bands ..... *albigenu*. Lutz.

**JANTHINOSOMA SAYI.** Theobald (1907).

*Culex musicus*. Say (1827) (non Leach, 1825).

*Janthininosoma musica*. Say (1827), Theobald.

*Janthininosoma mexicanus*. Blanchard (non Bellardi).

*Culex posticatum*. Coquillett (non Wiedemann).

Journ. Acad. Nat. Sc. Phil. VI., 149 (1827), Say; Mono. Culicid. I., 255 (1901); IV., 124 and 126 (1903); IV., 155 (1907), Theobald; Os Culicideos do Brazil, 151 (1908), Peryassu.

Brazil, British Guiana, N. America.

**JANTHINOSOMA SAYI.** Theobald.

var. *jamaicensis*. Theobald (1907).

Mono. Culicid. IV., 157 (1907).

Jamaica. Possibly a distinct species.

**JANTHINOSOMA LUTZII.** Theobald (1901).

*Culex albifasciatus.* Neveu-Lemaire (non Theobald) 1902.

Mono. Culicid. I., 257 (1901); III., 128 (1903); IV., 158 (1907), Theobald; Os Culicideos do Brazil, 152 (1900), Peryassu.

Brazil, British Guiana, Trinidad.

Type in the British Museum.

**JANTHINOSOMA ALBIPES.** Theobald (1907).

*Janthinosoma discrucians.* Theobald (non Walker).

Mono. Culicid. III., 126 (1903); IV., 157 (1907), Theobald.

Trinidad, Arkansas, Brazil.

**JANTHINOSOMA COQUILLETTII.** n. sp.

*Janthinosoma posticata.* Coquillett (non Wiedemann).

Mono. Culicid. IV., 153 and 154 (1907), Theobald (nom. nud.).

This specimen has been lost, the thorax had scattered bronzy and yellow scales. The species was founded on a specimen taken by Coquillett for Wiedemann's *posticata*.

**JANTHINOSOMA POSTICATA.** Wiedemann (1821), non Coquillett.

*Culex posticatus.* Wiedemann (1821).

*Janthinosoma terminalis.* Coquillett (1906).

Dipt. Exot. I., 43, 2 (1821), Wiedemann; Mono. Culicid. I., p. 253 (1901); III., 125 (1903); IV., 154 (1907), Theobald.

St. Lucia, Argentine.

**JANTHINOSOMA DISCRUCIANS.** Walker (1856), non Theobald.

*Culex discrucians.* Walker (1856).

*Janthinosoma arribalzagae.* Giles (1902).

Insecta Saund. 430 (1856), Walker; Mono. Culicid. III., 126 (1903); IV., 188 (1907), Theobald; Os Culicideos do Brazil, 154 (1908), Peryassu.

Trinidad, Brazil, N. America.

**JANTHINOSOMA VARIPES.** Coquillett (1904).

*Conchyliastes varipes.* Coquillett (1904).

*Janthinosoma johnstonii.* Grabham (1905).

Canad. Ent. XXXVI., p. 10 (1904), Coquillett; Mono. Culicid. IV., 154 (1907), Theobald.

Mexico; Mississippi; U.S.A.

Type in the National Museum, Washington.

**JANTHINOSOMA ALBIGENU.** Lutz (in Peryassu) (1908).

Os Culicideos do Brazil, 155 (1908), Peryassu.

São Paulo, Brazil.

*Note.*—This new species has the prothorax and thorax with two wide golden bands, and the hind feet with four bands.\*

**JANTHINOSOMA ECHINATA.** Grabham (1906).

Canad. Ent. XXXVIII., 311 (1906).

" ♀. Head covered with flat spindle-shaped scales, mingled with black hairs, a few long yellow hairs projecting between the eyes, many upright forked scales at the back. Eyes with deep purple reflections, bordered posteriorly with silver white scales. Antennae brown, basal segment deep brown, two slightly inflated, with a few short black hairs. Proboscis black, with violet reflections, speckled with yellow scales. Palpi densely covered with black and yellow scales, the latter predominating in the two basal joints. Clypeus black. Prothoracic lobes with a few golden scales and black hairs.

Mesonotum black, with spindle-shaped golden scales scattered over its surface, two denser clusters of these scales on the front margin adjoin the prothoracic lobes, also at the posterior margin between the lateral and mid bare spaces. Two narrow median bare lines running over three-quarters of the length of the mesonotum, broadening as they approach its anterior margin; a median and two lateral bare areas at the posterior margin. A row of long black hairs above the wing insertions; a number of short black hairs distributed in no definite order over the mesothorax. Scutellum black, clusters of golden scales on the mid and lateral lobes; six to eight black hairs spring from the posterior margin of the mid lobe and three to four from each of the lateral lobes. Pleura with patches of silvery white

\* Dyar and Knab propose the name *Janthinosoma indoctum*, n. sp., for the larvae known as *Janthinosoma scolasticus*, Theobald. This species is a typical *Culex*, and was placed by these gentlemen as *Janthinosoma* on larval characters. They now say *scolasticus*, Theob., is a *Culex*, and propose a new name for their larvae!

scales. Metanotum deep brown. Abdomen black with violet reflections, basal segment with long white hairs, apex of each segment bordered with a few long white hairs. Lateral apical patches of white scales in the posterior segments. Venter yellow, densely covered with broad yellow scales, among which are interspersed a few violaceous scales, especially near the bases of the segments. Legs dark metallic violet, with well marked knee spots on all the femora. Tibiae, metatarsi and tarsi of hind legs densely scaled; third and fourth tarsi of hind legs white scaled. All the unguis uniserrate and equal. Wings, first sub-marginal cell longer and narrower than the second posterior, its stem less than half its length. Stem of second posterior cell a little shorter than the cell; posterior cross-vein more than its own length behind the middle cross-vein. Halteres with pale stems and knobs.

*Length.*—5·5 mm.

♂. Antennae pale brown, second joint slightly inflated, thickly clothed with a number of long stalked black scales, with fan-like heads and long black hairs. Proboscis black, with a faint band on its lower third. Palpi longer than the proboscis by the two terminal joints. Two terminal joints inflated and densely black scaled, a number of long black hairs along the under surface, a few black hairs on the apex of the terminal joints. Antepenultimate joint inflated at apex, a few black hairs on the under surface near the apex. A single narrow band of golden scales on its lower third. Terminal segment of clasp greatly dilated in the middle. Harpes, limb extending into a thin lamina at the apex, from the internal border of which a number of long thin flattened hairs arise; at the tip two convoluted processes are attached. Harpogones with strong recurved tips and two stout thorn-like tubercles on their convex surfaces. Unci deeply chitinized, adherent along their internal borders. Setaceous lobes absent. Ungues of fore and mid tarsi unequal, the larger with two teeth, a long blunt one and a small basal one; the smaller with a minute basal tooth. Ungues of hind tarsi uniserrate and equal.

*Length.*—5·5 mm.

The following points were noted in the adult larva: Fully grown adult larva nearly five-sixteenths of an inch long. Antennae large and prominent, longer than the head, strongly curved about the middle, deeply fuscous except at the base. Slightly inflated in the lower half. Tuft at the middle of about six fine feathered hairs not exceeding half the antennal shaft in length. Apex with three or four short spines. Surface covered with stout chitinous spines. Mentum deeply infuscated, somewhat narrowly triangular; teeth dark and numerous; apical tooth large and prominent. Both upper and lower epistomal hairs are double and feathered, extending beyond the margin of the head. Ante-antennal tuft of 8–10 feathered divisions. Body glabrous except for a few small scattered dendritic hairs. A small dorsal patch of minute thorn-like spines, arranged in curved lines, on each segment

from the second to the seventh. Lateral hairs of the abdomen paired and flattened; on the anterior segments each hair is large and 4- to 7-branched, hairs becoming smaller and with fewer branches on the hinder segments. Comb of six or seven scales in a curved row, the largest in the middle. Central scales joined by a thin broad chitinous band, the upper and lower scales separate, base of each scale oval, sides coarsely setose below, the apical free border with one curved stout central spine and two to six much shorter lateral spines. Air-tube fusiform, inflated, deeply infuscated, devoid of hairs, about four times as long as wide (at the base); pecten rows of four well separated in each, a fifth small pair at the extreme base in some specimens; rows one-quarter length of tube; upper two pairs of teeth with two or three smaller denticulations on both sides. Band ringing the anal segment about as long as broad; barred area running along the whole length of the band. Ventral tufts 18-20 pairs. A pair of tufts and long simple setae dorsally. Anal gills very long, narrow, pointed,  $2\frac{1}{2}$  times as long as the longest hairs of the ventral brush. Pupa with short, stout siphons.

*Observations.*—Four living larvae of this handsome species were taken from a temporary pool in a logwood thicket, about  $5\frac{3}{4}$  miles along the Molynes Road, near Kingston, early in April, 1906. The larva is large and stout, the head, which is much compressed antero-posteriorly, is set at right angles to the thorax, and the large antennae are carried almost vertically downwards, giving the larva a peculiar appearance. The description of the larva is drawn up from the larval skin cast, that of the adult head, thorax and abdomen from the freshly killed specimens. A notable feature in the male is the thickly-scaled second antennal joint."

### GENUS PSOROPHORA. Robineau-Desvoidy (1827).

Essai, s. l. tribu d. Culic. Mém. d. l. Soc. d'Hist. Nat. d. Paris, III., 412 (1827), Robineau-Desvoidy; Mono. Culicid. I., 259 (1901); III., 130 (1903); IV., 158 (1907), Theobald.

Six species have been described in this genus,\* all from N. and S. America and West Indies.

The only six I know tabulate as below:—

A. Femora white at apices.

- Hind femora white scaled at apex ..... *scintillans*. Walker.
- All femora white scaled at apex ..... *genumaculatus*. Cruz.

\* Dyar and Knab describe three other species (*vide Appendix*).

AA. Femora not white at apices.

- Abdomen brown, with dull flat creamy white scales ..... *ciliata*. Fabricius.
- Abdomen brown to black, with dark yellowish brown scales ..... *holmbergii*. Arribalzaga.
- Abdomen basally white, and with white lateral spots; femora dark ..... *howardii*. Coquillett.
- Similar, but femora yellow ..... *cilipes*. Fabricius.

**PSOROPHORA SCINTILLANS.** Walker (1848).

*Sabethes scintillans*. Walker (1848).

Brit. Mus. List. Dipt. I., 1 (1848), Walker; Mono. Culicid. I., 265 (1901); III., 180 (1903); IV., 162 (1907), Theobald; Os Culicideos do Brazil, 157 (1908), Peryassu.

Brazil, Trinidad, Okla., U.S.A.

**PSOROPHORA GENUMACULATUS.** Cruz (in Peryassu) (1908).

Os Culicideos do Brazil, 161 (1908), Peryassu.

Brazil.

**PSOROPHORA CILIATA.** Fabricius (1794).

- Culex ciliatus*. Fabricius (1794).
- Culex molestus*. Wiedemann (1821).
- Culex rubidus*. Rob.-Desvoidy (1827).
- P. boscii*. Rob.-Desvoidy (1827).
- Culex perterrens*. Walker (1856).
- Culex conterrens*. Walker (1856).

Ent. Syst. IV., 401, Fabricius; Mono. Culicid. I., 261 (1901); III., 130 (1903); IV., 189 (1907), Theobald; Os Culicideos do Brazil, 156 (1908), Peryassu.

North America, British Honduras, Argentine, Brazil.

*Additional locality.*—New Jersey, U.S.A.

**PSOROPHORA HOLMBERGII.** Arribalzaga (1891).

Rev. d. Museo. d. l. Plata, Dipt. Arg. 40 (1891), Arribalzaga; Mono. Culicid. I., 264 (1901); Os Culicideos do Brazil, 158 (1900), Peryassu.

Brazil, Argentina.

**PSOROPHORA HOWARDII.** Coquillett (1902).

Canad. Ent. 258 (1902), Coquillett; Mono. Culicid. III., 131 (1903); IV., 162 (1907), Theobald.

North America.

PSOROPHORA CILIPES. Fabricius (1885).

*Culex cilipes.* Fabricius (1885).

Syst. Antl. 34, 3 (1805), Fabricius.

North America.

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GENUS **MUCIDUS.** Theobald (1901).

Mono. Culicid. I., 268 (1901).

Seven species have been described in this marked genus, representatives occurring in India, East Indies, Africa and Australia.

The species tabulate as follows :—

- A. Proboscis with ochreous, yellow and some black scales. No apical white band.
  - a. Wing fringe with 8 pale spots.
    - $\beta$ . Stem of second posterior cell shorter than the cell ..... *alternans.* Westwood.
    - $\beta\beta$ . Stem of second posterior cell longer than the cell; thorax with two dark eyelike areas..... *scataphagooides.* Theobald.
    - $\alpha\alpha$ . Wing fringe with 7 pale spots ..... *mucidus.* Karsch.
    - $\alpha\alpha\alpha$ . Wing fringe with 5 pale spots ..... *africanus.* Theobald.
    - $\alpha\alpha\alpha\alpha$ . Wing fringe with 4 pale spots between veins..... *grahamii.* n. sp.
  - AA. Proboscis with a white band at apex.
    - Wing fringe 8 pale spots, no dark markings on thorax.
      - Hind tarsi with basal white bands ... *sudanensis.* Theobald.
      - Hind tarsi with apical white bands... *laniger.* Wiedemann.

**MUCIDUS ALTERNANS.** Westwood (1835).

*Culex alternans.* Westwood (1835).

*Culex commovens.* Walker (1848).

*Culex hispidosus.* Skuse (1889).

Ann. Soc. Ent. Fr. IV., 681 (1835), Westwood; Mono. Culicid. I., 269 (1901); III., 134 (1903); IV., 162 (1907), Theobald; Ann. Queensland Mus., No. 8, 18 (1908), Bancroft.

Queensland; New South Wales; Natal (Walker)? and New Guinea.

*Additional localities.*—Johnstone River, N. Queensland (Bancroft) ; Port Darwin, one ♀ (F. Dodd per Dr. Bancroft).

*Notes.*—Dr. Bancroft gives the following notes on this species :—“This is the ‘Scotch Grey,’ common throughout the year all over Queensland, but especially along the coast and extending into New South Wales, where it is sometimes called the ‘Hexham Grey.’ It is a vicious biter; does not live in confinement. It oviposits singly, the eggs are large, oval, black in colour, pitted and float on their side. The larvae are to be found plentifully in salt water swamps, especially in stagnant pools of water left by the high spring tides; when there is no salt water available the mosquito will oviposit in fresh water; the larvae devour other larvae, but not to a great extent.”

I have examined five specimens in the National Museum, Budapest, from New Guinea which are undoubtedly this species.

#### *MUCIDUS SCATAPHAGOIDES.* Theobald (1901).

Mono. Culicid. I., 277 (1901), Theobald; Rec. Ind. Mus., II., pt. iii., No. 30, 288 (1908), Theobald.

Myingan, Burma ; Moradabad, India.

*Additional localities.*—Bauria, Bengal (D. A. Tyrie), one ♀, 17. viii. 07; Damukdia Ghat, E. Bengal, 22. viii. 07, one ♀ (Ind. Mus., Calcutta); Purneah, N. Bengal, one ♀, 5. viii. 07 (C. Paiva) (Ind. Mus., Calcutta); Ceylon (E. E. Green).

#### *MUCIDUS MUCIDUS.* Karsch (1887).

*Culex mucidus.* Karsch (1887).

Ent. Nachr., 25 (1887), Karsch; Mono. Culicid. I., 272 (1901), Theobald; Handb. of Gnats, 214, 11 (1900) and 349 (1902), Giles; Les Moust. 244 (1905), Blanchard; Gen. Ins. Culicid., 17 (1905), Theobald; Phil. Jour. Sci. I., 9, 982 (1906).

Delagoa Bay; Whydah, W. Africa.

*Additional localities.*—Manila, P.I. (P. C. Woolley in Banks); Delagoa Bay, E. Africa, one ♀ (in Amsterdam Museum), and two ♂'s and one ♀, x. 09 (José F. Sant' Anna) in Brit. Mus.

#### *MUCIDUS AFRICANUS.* Theobald (1901).

Mono. Culicid. I., 274 (1901); III., 134 (1903); IV., 163 (1907), Theobald.

Asaba, W. Africa; Uganda; Nigeria; Transvaal; Natal.

*MUCIDUS GRAHAMII.* nov. sp.

Head rich ochreous brown with a pale border around the eyes and a pale scaled median line; prominent curved golden chaetae projecting over the eyes; palpi densely scaled with outstanding white scales and a few scattered dark ones, about two-thirds the length of the proboscis, which is bright ochreous at the apex with outstanding dark and pale scales at the base. Antennae with bright ochreous base.

Thorax brown with brown scales and scattered pale ones. Abdomen dark brown with basal median and lateral white patches and white and black lateral outstanding scales. Wings with mostly dark scales, a yellow spot on the tip. Legs ochreous, femora and tibiae with black outstanding scales, the former with a white band on the apical half and one at apex, tibiae with broad snow-white apical band; fore and mid metatarsi and tarsi bright ochreous yellow; hind metatarsi black scaled, first three tarsals white with yellow apices, last yellow.

♀. Head bright ochreous brown with numerous dark thin upright forked scales, a broad line of white twisted scales in the middle and a few scattered amongst the dark fork-scales, small snowy scales around the eyes, small flat white ones at the sides, with a few broadly expanded white upright scales; a tuft of long brown chaetae projecting between the eyes, some dark ones, on the border near the tuft, projecting inwards, and then five curved golden chaetae bending over the eyes on each side; eyes large with brilliant coppery red and turquoise blue reflecting spots; clypeus pale brownish; palpi about two-thirds the length of the proboscis, ochreous, densely clothed with long outstanding snow-white scales, with similar black ones scattered about, except at the tip, and with some black chaetae; proboscis ochreous, with ochreous yellow scales apically, black scales and some white ones outstanding basally; labellae dark; antennae brown, basal segment bright ochreous, with dense white scales on one side and some black chaetae.

Thorax brown with some small golden brown scales, some ochreous ones and longer white ones here and there, very long in front and at the posterior region, at the sides, and traces of two rough lines in front, very indistinct; some brown and golden brown chaetae; dense long dark chaetae over the wing roots; scutellum with long irregular white scales; metanotum black; pleurae with dark brown areas separated by pale scales.

Abdomen dark ochreous and brown with dense outstanding dark broadly expanded scales in places, more appressed in others with basal patches of median outstanding scales, which are more numerous on the apical segments, each segment with lateral, basal, outstanding, broadly expanded white scales and black apical ones.

Legs ochreous with loosely appressed and outstanding black and white scales; fore femora with most of the outstanding scales black, white ones at the base, a few in the middle, and many at the apex; fore tibiae with dark outstanding scales, a broad band of snowy-white ones at the apex; metatarsi and tarsi bright ochreous, the scales much more closely appressed, some black chaetae; mid legs similar to the fore but with a few black outstanding scales on the metatarsi, and the tibiae more densely black-scaled; hind legs with the white apical tibial band not so broad, the metatarsi with many dark outstanding scales, the first three tarsals with fine outstanding pure white scales, except at their apices where the outstanding scales are yellow with a few with dusky tips; most of the last tarsal with yellowish scales, a few white ones in the middle; unguis dark, all equal and uniserrate.

Wings tinged with black, white and ochreous scales, the latter most numerous on the costal, sub-costal and first long vein, and forming a distinct spot just before the apex of the wing, spreading on to the outer branch of the second long vein; the veins mostly clothed with dark scales; the areas of the cross-veins tinged with brown; first sub-marginal cell longer and narrower than the second posterior cell, its base about level with that of the latter, its stem about two-thirds the length of the cell; stem of the second posterior cell mostly pale scaled, about as long as the cell; the third long vein close to the second; posterior cross-vein slightly nearer the apex of the wing than the mid; fringe dark, a small pale area *at* the junction of the third long vein and the costa, a small pale area *between* the fourth and fifth veins, another *between* the branches of the latter, and a broad one past the sixth vein. Halteres with ochreous stems, slightly fuscous knobs with white scales.

*Length*.—9·5 mm.

*Habitat*.—Obuasi, Ashanti (Dr. Graham).

*Time of capture*.—12. vi. 07.

*Observations*.—Described from a nearly perfect female, caught on bush path. This is a very distinct *Mucidus*, noticed at once

by Dr. Graham as distinct from *M. africanus*, Theob. The main features are the thin ochreous fore and mid metatarsi and tarsi, and the white and ochreous hind tarsi; also the long white-scaled palpi, and the wing fringe with pale spots between the veins. Its general dark appearance and yellow fore and mid feet at once distinguish it.

Dr. Graham in his notes refers to it as taken in dense bush, north of Obuasi, flying over swampy ground in the day time.

#### MUCIDUS SUDANENSIS. Theobald (1908).

Third Report, Gord. Coll., Well. Labs. Khartoum, 252 (1908).

Thorax yellowish-brown with patches of shaggy grey scales. Abdomen bright ochreous with basal median and lateral white shaggy patches; the median patches being large on the last three segments. Legs pale ochreous with bands of dark tipped and white outstanding scales; the femora with a white band towards the apex and one at the tip; tibiae with white basal, median and apical bands; metatarsi with white basal and median bands; tarsi with white basal bands. Ungues equal thick and serrated. Wings with eight pale areas to the fringe.

♀. Head brown with scattered loose white scales and a median broad line of twisted white scales; bright ochreous thin upright forked scales and golden hairs, a prominent border of narrow-curved creamy scales around the eyes. Antennae bright ochreous, the basal segment with small white scales, the nodes dusky and also the verticillate hairs; frons and clypeus bright ochreous; palpi ochreous with large scattered loose white and dusky tipped scales, apices entirely white scaled; eyes dark and metallic brassy; proboscis ochreous with loose dusky tipped scales, except at the apex where they are snow-white.

Thorax brownish with very fine narrow-curved white scales in front, becoming dull yellowish behind; a small median patch of white twisted scales near the head and a patch on each side just behind it, two other pairs of patches further back almost continuous, and a dense tuft of long white thin-stalked scales projecting outwards in front of the wings, a few forming a median white line, more in number where it reaches the space before the scutellum, which has white scales on each side of it; some very small white scales forming a line on each side behind the wings; chaetae golden brown, paler at the tips; scutellum with a tangled mass of long twisted white scales and long thin

dense golden brown border-bristles; metanotum pale brown; pleurae dark brown with patches of pale scales.

Abdomen brownish, covered with flat loose bright ochreous scales, each segment with a basal white median patch of larger scales, somewhat triangular in form, and an outstanding basal patch of long white scales on each side, broadly spatulate at their apex with very thin stems; on the fifth and sixth segments the white scales are more abundant, the apical segment mostly ochraceous but with some median white scales; there are also some flat dusky scales on each side of the median white ones, and some dusky tipped rather outstanding ones behind, especially on the apex of the fourth.

Legs ochreous covered with dusky tipped and white scales, the former being ochreous at their base; fore femora with white scales at the apex and a narrow ring of white near, tibiae with basal, median and apical white bands; metatarsi and tarsi



Fig. 44.  
Fore foot of *Mucidus sudanensis*. ♀. Theobald.

ochreous; mid legs with femora the same and the tibiae with broader white bands and more outstanding dusky tipped scales; metatarsi white at the base and in the middle, first tarsal with a basal white band, rest unbanded; hind legs with the white bands still more pronounced and all the tarsi with basal white bands and the outstanding dusky tipped scales more numerous than on the mid legs; unguis all equal, dark thick and uniserrated.

Wings clothed with ochreous, dusky, white and parti-coloured scales, the last two mainly towards the base of the wings; the first submarginal cell slightly longer, but scarcely narrower than the second posterior cell, its base almost level with that of the latter, its stem about two-thirds the length of the cell, stem of the second posterior longer than the cell; posterior cross-vein longer than the mid and slightly in front of it; the third vein close to the second and continued to the base of the wing as a pseudo-vein; a distinct pseudo-vein continued from the upper branch of the fifth to the base of the wing, and a distinct pseudo-

vein between the fifth and sixth ending at the tip of the fifth. The costal and first long vein mostly ochreous scaled, the latter with some dark scales towards the tip and some white and parti-coloured ones at the base ; the upper branch of the second ochreous and its apical half, the rest with some scattered dark scales, the third and fourth the same, the latter with white and parti-coloured scales at the base ; the upper branch of the fifth



Fig. 45.  
Wing of *Mucidus sudanensis*. ♀. Theobald.

densely scaled from the cross-vein with dark scales, from the cross-vein to the junction with the lower branch and with it yellow scaled, apical half of stem yellow scaled, rest with dark parti-coloured and white scales, sixth with large, dense, mostly dark scales on the apical half ; fringe with eight pale spots separated by seven dark spots placed at the tips of the fourth, fifth, and sixth veins and two further back ; fringe at the apex yellowish, a dusky patch on the costa near the tip of the wing.

*Length*.—7 mm.

*Habitat*.—Sudan (H. King).

*Observations*.—Described from three females taken by Mr. King, who pointed out their difference from *M. africanus*, Theobald. The species comes near it, however, and also near *M. mucidus*, Karsch. From the former it may be told by the eight pale fringe spots and by different tibial banding which is black on the basal half, white on the apical in *africanus*, whereas this species has three white bands ; the second posterior cell also differs in having a longer stem.

From *M. mucidus* it differs in having less twisted scales on the thorax, eight instead of seven pale fringe spots, and by the presence of a mid tibial band, and in the unbanded fore tarsi.

*Type* in the British Museum.

MUCIDUS LANIGER. Wiedemann (1821).

*Culex laniger*. Wiedemann (1821).

Dipt. Exoti. I., 9 (1821), Wiedemann; Mono. Culicid. I., 279 (1901), Theobald.

Java and Coromandel.

Type in Wiedemann's collection.

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GENUS QUASISTEGOMYIA. Theobald (1906).

Sec. Rep. Gord. Coll., Well. Lab., 69 (1906); Mono. Culicid. IV., 165 (1908).

This genus contains but three species so far, two occurring in the Sudan and the other from the Philippine Islands. In the males described here as *Q. dubia* there is a small area of flat white scales in the mid line of the thorax in front. No such scales occurred in the ♀'s of *Q. unilineata* (Theobald), and hence they have been placed as a distinct species. It is quite possible however that difference is purely a sexual one, and that *Q. dubia* is only the ♂ of *Q. unilineata*. I have not seen Miss Ludlow's species. The three species can be told as follows:—

Thorax brownish black, a median white line, divided by very narrow dark line, 2 small white spots where it ends, a white patch in front of roots of wings, a few white scales before white scutellum ..... *unilineata*. Theobald.

Thorax black with a median patch of flat silvery scales in front by head, a large white patch on each side and a smaller one near wings, and a patch of flat white scales on each side before scutellum ..... *dubia*. n. sp.

Thorax brown with dark brown median area, white scales near head, a broad white lateral stripe about  $\frac{1}{2}$  length mesonotum, large white spot in front of base of wings, a short median white to yellow line behind, and a short one on each side in front of scutellum. Legs basal white spots, not bands ..... *gardnerii*. Ludlow.

QUASISTEGOMYIA UNILINEATA. Theobald (1906) ♀.

Sec. Rept. Gord. Coll., Well. Lab., 70 (1906); Mono. Culicid. IV., 166 (1907), Theobald.

Sudan.

Type in the British Museum.

## QUASISTEGOMYIA DUBIA. nov. sp.

Head black with a median snowy white area and a small white patch on each side; proboscis black; palpi nearly as long as the proboscis, acuminate, no hair tufts, black, the two last segments with basal snowy spots, a broad median white band and a narrow basal one; antennae with deep brown plumes. Thorax black, with a median patch of flat silvery-white scales in front near head, a large patch of snowy-white large broad curved scales on each side; a smaller patch in front of the wings, a



Fig. 46.  
*Pseudostegomyia dubia*. ♂. Head.

patch of flat white scales behind on each side of the bare space in front of the scutellum; scutellum with flat silvery-white scales.

Abdomen black, with basal white bands. Legs black, mid femora with a silvery spot at apex and on apical half; metatarsi of fore and mid legs and first tarsal with basal white bands, hind femora also with spots and a white basal band on second tarsal.

♂. Head clothed with flat black scales over most of its surface, two rows of flat silvery-white median scales, narrow dark line between, flat white scales at the sides, dusky upright

forked scales at the back, black chaetae projecting forwards and inwards over the eyes; clypeus and proboscis black, basal lobe of antennae black with flat silvery-white scales on the inside, joints banded black and brown, plume hairs deep blackish-brown; palpi nearly as long as the proboscis, bluntly acuminate, black, the two apical segments nearly equal, each with a basal snow-white spot, both with a few long black chaetae, and some on the apex of the antepenultimate segment, which has a broad snow-white band near middle and a narrow one basally.

Thorax black, clothed with narrow-curved bronzy-black scales, in front a large snow-white median spot of flat scales, on each side behind a large snow-white patch of broad curved scales, and a small one just at the roots of the wings, surrounding the bare space in front of the scutellum are flat silvery-white scales, with some broad curved ones in front showing mauve reflections; chaetae thick, black; scutellum black with flat snowy-white scales; metanotum black; pleurae black with four patches of flat silvery-white scales.

Abdomen black with basal silvery-white bands, the last two segments with lateral white patches.

Legs black, ornamented as follows:—Fore femora with a few white scales, mid with a snow-white apical spot, and another on the shaft with one or two white scales more basally, hind femora

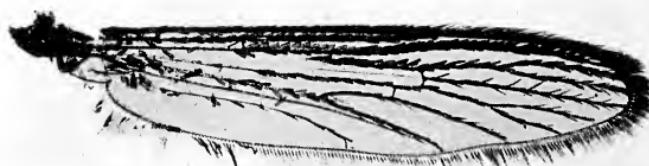


Fig. 47.  
Wing of *Quasistegomyia dubia*. ♂. n. sp.

white ventrally on the basal two-thirds, then a silvery spot and another at the apex; tibiae all black; metatarsi with a basal white band, broadest and whitest on the hind pair, fore and mid first tarsals with narrow white band, and in the hind legs the second tarsal also; fore and mid unguis unequal, the larger simple, the smaller uniserrate; hind equal and simple.

Wings with broad scales on the sub-costal and first long vein, *taeniorhynchus*-like ones on the second, thinner lateral ones on

the other veins ; fork-cells short, the first longer and narrower than the second, their bases about level, stem of the first more than half the length of the cell ; stem of the second nearly as long as the cell ; posterior cross-vein longer than the mid, about twice its own length distant from it. Genitalia with rather small, narrow, claspers, with dark blunt apical spine.

*Length*.—4·8 to 5 mm.

*Habitat*.—Bor, Sudan (H. King).

*Time of capture*.—8. vi. 09.

*Observations*.—Described from two perfect ♂'s, one dissected. It bears some resemblance to *Q. unilineata*, but there is the absence of the median line and the presence of the flat scaled white area in front, and totally different wing scales from the ♀ of that species ; it may however be the male of that insect, but it is very doubtful. It is placed in that genus owing to the marked flat thoracic scales around the scutellum, but also is related to *Kingia* by the presence of flat scales on the middle line in front. If this character occurs in the ♀ then it must be placed in a new genus.

**QUASISTEGOMYIA GARDNERI.** Ludlow (1905).

*Pseudostegomyia gardnerii*. Ludlow (1905).

*Stegomyia gardnerii*. Ludlow (1905).

Canad. Ent. XXXVII., 99 (1905), Ludlow; Phil. Journ. Sci. I., 9, 984 (1906), Banks; Mono. Culicid. IV., 168 (1907), Theobald; Mosq. Philip. Isl. 10 (1908), Ludlow.

*Habitat*.—Mindoro, Bulacao, P. I. (F. Gardner); Pampanga, Camp Stotsenberg, Angeles, P. I. (E. R. Whitmore).

*Note*.—Miss Ludlow tells me that she in haste wrote *Pseudostegomyia* for *Quasistegomyia*, purely a clerical error.

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**GENUS KINGIA.** nov. gen.

Head clothed with flat scales and upright forked scales, with traces of a few narrow-curved ones behind. Palpi of ♀ short.

Thorax with narrow-curved scales to the mesonotum and with flat scales in the anterior median line and a large lateral patch on each side of similar flat scales and others at the sides ; scutellum with flat scales. Venter of abdomen slightly tufted. Wings very densely scaled with long *taeniorhynchus*-like lateral scales, the scales on the first, second and third veins all overlapping.

This genus is very near *Quasistegomyia*, Theobald, but can be told at once by the flat white lateral scales.

KINGIA LUTEOCEPHALA. Newstead (1907).

*Stegomyia luteocephala*. Newstead (1907).

Ann. Trop. Med. and Parasit I., No. 1, 15 (1907).

"Head yellow. Palpi black with white tips. Thorax brown, with two large, anterior, lateral silvery spots, a median yellow stripe and posterior lateral yellow spots; scutellum white. Abdomen black with pale narrow bands, terminal segments silvery. Legs black with silvery spots and white banded tarsi.

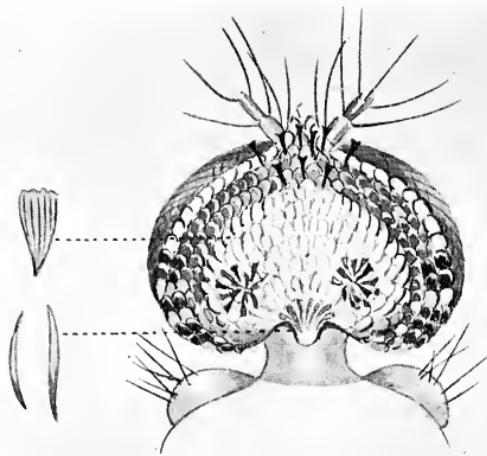


Fig. 48.

*Kingia luteocephala*. ♀. Newstead (after Newstead).  
(Cephalic adornment.)

♀. Head with large central area thickly clothed with large, loose, flat yellow scales, gradually merging into smoky-yellow in front; a narrow silvery-white line to the anterior half of the eyes, formed of a single series of broad, flat, closely appressed scales; between the marginal line and the central yellow patch is a broad band of brownish-black scales; nape with a few long, thick, straight or slightly curved pale golden scales, on either side of which is a group of upright forked scales, intermixed black and yellow; lower basal portion with flat dusky-white scales, the marginal ones forming two dull silvery spots, sharply divided by a dense black spot. Antennae black, nodes white; hairs black, pubescence grey.

Palpi black; tips with long silvery-white scales. Thorax: prothoracic lobes with flat silvery-white scales; mesothorax with a well-defined median line and two lateral spots of narrow-curved, golden yellow scales; anteriorly there are also two large spots of flat silvery-white scales, and a few silvery-white scales on the lower margin of the posterior yellow spots; the rest of the mesothorax with dark brown scales; scutellum with flat silvery-white scales; pleurae dark brown with two large patches of silvery scales.

Abdomen rich bronzy-brown; segments 1 to 6 each with a well-defined, narrow, basal band of smoky-yellow scales; penultimate segment with a large lateral patch and the terminal segment almost covered with brilliant metallic-silvery scales; venter with well-defined, more or less triangular patches of metallic-silvery scales narrowing towards the apex, where they appear as two divergent lines; the scales forming the outer lateral angles of the spots projecting at the sides of the abdomen appearing as *outstanding scales*.

Legs bronzy blackish-brown; coxae and trochantae, ochreous; anterior and mid femora with scattered metallic-silvery scales; hind femora with a central anterior band and an apical group of silvery scales; anterior and mid tarsi with narrow dull-white basal bands to the first three segments, metatarsal band broadest; hind tarsi with a broad white basal band to the first, a narrow one to the second, and the third segment almost entirely white above, basally it is not so.

Wings uniformly pale brown, rather densely scaled, first



Fig. 49.

Wing of *Kingia luteocephala*. ♀. Newstead.

sub marginal cell much longer and slightly narrower than the second posterior."

The wings show the following :—First fork-cell much longer and narrower than the second fork-cell, its base nearer the base of the wing, its stem a little more than one-third the length of the cell; stem of the second fork-cell not quite as long as the cell, posterior cross-vein longer than the mid, not quite twice its own length distant from it.

♂. Head with rather loose ochreous yellow scales becoming dusky and then black except in the middle line, a patch of silvery-white scales on each side at the eye border, numerous ochraceous forked scales along the nape becoming dusky in the middle. Antennae black, with dull grey bands, dense black plumes, showing grey reflections at the tip; proboscis long, thin and black; palpi as long as the proboscis, thin, black, a very narrow white band at the base of the apical and penultimate segments, a broad one in the middle of the antepenultimate, last two segments nearly equal, a few black hairs on each side of the penultimate, fewer on the apical segment, and a few on the apex of the antepenultimate.

Thorax as in ♀, but the median yellow line and the lateral yellow-scaled spots more pronounced.

Abdomen unbanded, the segments with prominent silvery-white basal lateral spots; hairs black with golden sheen; claspers apparently simple, basal lobes of genitalia long and narrow.

Fore and mid unguis unequal, simple; hind equal and simple.

Wings with short fork-cells, the first longer and narrower than the second, its base if anything a little nearer the base of

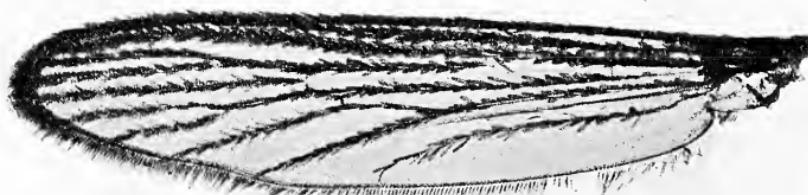


Fig. 50.

Wing of *Kingia luteocephala*. ♂. Newstead.

the wing, its stem a little less than half the length of the cell; stem of the second fork-cell about two-thirds the length of the

cell ; posterior cross-vein about two and half times its own length distant from the mid ; wing scales mostly rounded apically.

*Length*.—4·5 to 5 mm.

*Habitat*.—Kimba, Congo Free State (Newstead) ; Sudan (H. King) ; Mpuma, Uganda (Sir David Bruce).

*Observations*.—I have reproduced Mr. Newstead's description of the ♀, but in those I have seen there is a double line of flat silvery scales in the middle line in front of the yellow median line, and I have added certain characters to the wings taken from a mounted wing in balsam.\*

The yellow appearance of the head should, as Newstead points out, at once render the identification of this species easy.

The Congo Free State specimens were taken in the bush.

The Sudan specimens were bred by Mr. King from larvae taken in a small hole in a tree about a mile inland from Bor. The water was very foul and contained a mixed lot of larvae. They were collected on May 20th, and most of the adults emerged shortly after. The other species taken with it were *Quasistegomyia dubia* and a *Culiciomyia* sp.? Mr. King remarks in his field notes sent me that it is "an exceedingly brilliant mosquito when alive, the gold and silver markings showing up well. Only the two specimens sent emerged."

The ♀ type in the Collection of School of Tropical Medicine, Liverpool, the ♂ in the British Museum.

#### KINGIA ANNANDALEI. Theobald (1910).

*Stegomyia annandalei*. Theobald (1910).

Rec. Ind. Mus. IV., 10 (1910).

Head black with a large median white patch ; palpi black with snowy-white apices ; proboscis black. Thorax black-brown with a snowy-white patch in front and one over the roots of the wings. Abdomen jet black with snowy-white basal bands which gradually swell out laterally. Legs black, banded with snowy-white, the hind legs with a band at the base of the metatarsal, first tarsals and the whole of the third white.

♀. Head clothed with flat black scales, with a large median triangular snowy-white patch and a small dull white lateral

\* Mr. Newstead writes me that there are traces of the median anterior flat scales on the thorax in the type of *iuteocephala*, and that he has now a better specimen showing this marked feature.

patch, some black chaetae in front; palpi black scaled with broad snowy-white apices; proboscis black; antennae deep brown, basal segment with dense snowy-white scales.

Thorax shiny black, clothed with long bronzy-brown narrow-curved scales, except for a small snowy-white patch of similar scales in front and a patch of flat snowy-white scales over the base of the wings on each side; supra-alar chaetae dense, black and long; scutellum with the mid lobe clothed with flat black scales, the lateral lobes with flat white scales; border bristles black; metanotum deep brown; pleurae dark with numerous white patches of scales.

Abdomen black with four snowy-white basal bands on the last four segments, which broaden out laterally, the two preceding segments with basal white lateral spots.

Legs black, the fore and mid with basal white bands on the metatarsi and first tarsal; the hind with a basal white band on the metatarsi and first tarsal segments, the second all dark, the third nearly all white, the fourth dark; unguis *apparently* all simple.

Wings with brown scales; fork-cells short, the first submarginal longer and narrower than the second posterior, its base a little nearer the base of the wing than that of the second posterior, its stem about two-thirds the length of the cell; stem of the second posterior nearly as long as the cell; posterior cross-vein rather more than twice its own length distant from the mid.

*Length.*—2·8 mm.

*Habitat.*—Sukna, 500 feet, Himalayas.

*Time of capture.*—vii. 08 (Annandale).

*Observations.*—Described from a single perfect ♀. It resembles *Stegomyia minutissima*, but can at once be told by the banding of the posterior legs and still more definitely by the flat white scales forming the lateral thoracic patches. The specimen was taken in a bungalow.

*Type* in the Indian Museum, Calcutta.

**GENUS DESVOIDYA.** Blanchard (1901) nov. nom.

**ARMIGERES.** Theobald (non Armiger Hartman).

There are five species in this genus which occurs in Ceylon, India, Malay States, E. Indies, China, Japan, and Philippine Islands.

The species tabulate as follows :—

A. Abdomen unbanded.

- α. Thorax uniformly brown, pale at the sides.
- β. Apical palpal segment of ♂ slightly longer than penultimate ..... *obturbans*. Walker.
- ββ. Scutellum of ♂ and ♀ all dark scaled; apical palpal segment of ♂ not as long as the penultimate ..... *fusca*. Theobald.

αα. Thorax elaborately adorned.

- βββ. Last two segments of ♂ palpi of equal length ..... *panalectoros*. Giles.

ααα. Thorax with a short median white line running from the scutellum to level of wing roots ..... *joloensis*. Ludlow.

AA. Abdomen with apical yellow bands ..... *apicalis*. Theobald.

**DESVOIDYA OBTCRBANS.** Walker (1860).

*Culex obturbans*. Walker (1860).

*Culex ventralis*. Walker (1865).

*Armigerae obturbans*. Theobald (1901).

*Armigerae ventralis*. Giles (1902).

*Desvoidea obturbans*. Theobald (1903).

Proc. Linn. Soc. Lond. IV., 91 (1860), Walker; Mono. Culicid. I., 323 (1901); III., 138 (1903); IV., 163 (1907), Theobald; Philip. Journ. Science, I., 9, 983 (1906), Banks; Rec. Ind. Mus., II., pt. iii., No. 30, 293 (1908), Theobald.

Amboyna, Celebes, Waigiou, Mysol, North Ceram, India, Federated Malay States, Formosa, China, Philippine Islands.

*Additional localities*.—Sylhet (Major Hall) and Lushai Hills (E. C. Macleod), Assam; Madulsima, Ceylon, 1 ♀, 26. ix. 07 (E. Green); West Lake, Hangchow, China, 1 ♂, 28. viii. 07 (C. E. Cornford), in Brit. Mus.; Samarang, Java, 5 ♀'s, 4 ♂'s, i. ii. and iii. 04 and viii. 05 (Jacobson), in Amsterdam Museum; Waria River, British New Guinea (Dr. R. Fleming Jones) (British Museum); Kurseong, E. Himalayas, 5000 ft., 5. vii. 08 (N. A.); Sukna, E. Himalayas, 500 ft., 1. viii. 08 (N. A.), in

jungle ; Calcutta, 21. i. 08 ; 13. iii. 07 ; 16. iii. 07 ; 15. vii. 07 ; 22. vii. 07 ; 2. viii. 07 ; and 6. viii. 07 (5) ; 28. i. 08 (N. A) ; 3. 4. viii. 07 (2) ; 15. viii. 07 ; 2. viii. 07 ; 23. viii. 07 ; and specimens labelled  $\frac{5464}{13}$ ,  $\frac{5469}{13}$ ,  $\frac{5480}{13}$  (all damaged) ; Ballyganj, Calcutta, 30. ix. 08 ; 9. x. 08 (T. Bentham) (10) ; ii. x. 08 (5) ; 4. xii. 08 (C. Paiva) ; 7 xii. 08, biting by day ; 15. xii. 08 ; Rajmahal, Bengal, 31. vii. 07 ; Tribandrum, Travancore, 14. xi. 08, all in Indian Museum, Calcutta.

*Notes and observations.*—Banks records the Philippine locality as Pampanga, Camp Stotsenberg, Angeles, P. I. (E. R. Whitmore). A very large series in the collection of the Indian Museum, Calcutta, has been examined from Sylhet, Assam (January, May and June), Calcutta, in May, August, September and October ; Lushai Hill, Assam, in July and Manipur in August. Many had the scutellum variegated. All varieties of colour, between *obturbans*, Walker, and *fusca*, Theobald, could be seen in these.

Brunetti says it is a common species from the E. coast of India, through the Straits, and up the Chinese coast.

*Type* in the British Museum.

#### **DESVOIDYA FUSCA.** Theobald (1903).

Mono. Culicid. III., 135 (1903) ; IV., 165 (1907) ; Rec. Ind. Mus. II., pt. iii., No. 30, 293 (1908), Theobald ; Phil. Journ. Sci. I., 9, 983 (1906), Banks.

Federated Malay States ; Philippine Islands.

*Additional localities.*—Sylhet, Assam (Major Hall) ; Lushai Hills, Assam (E. C. Macleod) ; Calcutta (Ind. Mus. Calc.).

*Notes and Observations.*—The exact locality in the Philippine Isles given by Banks is Pampanga, Camp Stotsenberg, Angeles, P. I. (E. R. Whitmore). This was erroneously placed as a variety of *obturbans* by me in the Records of the Indian Museum.

*Type* in the British Museum.

#### **DESVOIDYA PANALECTOROS.** Giles (in Theobald) (1901).

*Armigeres panalectoros.* Giles (1901).

*Desvoidya panalectoros.* Giles (1903).

Mono. Culicid. II., p. 317 (1901) ; ibid. III., 139 (1903) ; IV., 163 (1907), Theobald ; Philip. Journ. Sc. I., 9, 983 (1906), Banks.

Calcutta ; Perak.

*Additional localities.*—Pampanga, Camp Stotsenberg, Angeles,

P. I. (E. R. Whitmore) (in Banks); Samarang, Java, 1 ♂, viii. 05 (Jacobson) in Amsterdam Museum.

*Note*.—The co-type of this species in the Indian Museum, Calcutta ( $\frac{8686}{13}$ ) is nothing but an immature large *Culex fatigans*, Wied., with distinct abdominal banding.

**DESVOIDYA JOLOENSIS.** Ludlow (1904).

*D. fusca* var. *joloensis*. Ludlow (1904).

Canad. Ent. XXXVI., 236 (1904), Ludlow; Mono. Culicid. IV., 165 (1907), Theobald; Journ. Phil. Sci. I., 9, 983, (1906), Banks; Mosq. Philip. Isls., 10 (1908), Ludlow (*Desvoidea fusca* var. *joloensis*).

Philippine Islands.

**DESVOIDYA APICALIS.** Theobald (1910).

Rec. Ind. Mus. IV., 5 (1910).

Head dark brown paler around the eyes; palpi and proboscis black. Thorax bronzy-brown, with a pale line around the front and sides; pleurae brown with silvery-white scaled areas. Abdomen black with prominent apical yellow bands and snowy-white lateral spots. Legs black, unbanded, base of femora and venter white.

♀. Head clothed with flat violet-black scales, some white ones forming a central line, and small creamy-curved ones forming a border around the eyes; a tuft of pale golden chaetae projecting between the eyes, dark ones at the sides; clypeus black with small creamy spindle-shaped scales; palpi and proboscis deep violet black; antennae black, the basal segment testaceous and black with small creamy scales, base of the second segment bright ferruginous.

Thorax black, with narrow-curved almost hair-like bronzy scales, broader and pale ones forming a border around the front and sides of the mesothorax, the scales longer, broader and larger before the scutellum; a dense tuft of brown chaetae over the roots of the wings; scutellum clothed with flat violet scales, border-bristles rich brown; metanotum brown; pleurae brown with patches of flat white scales.

Abdomen black, with violet reflections, all the segments but the first and last two with broad yellow apical bands, narrowed at the sides, and not passing quite to the edges; posterior border-

bristles small, brown with pale reflections ; large lateral white spots, most marked on the apical segments.

Legs black, unbanded, femora pale beneath, the hind pair white below and at the base ; chaetae dark (in some lights the legs have a brassy sheen) ; fore and mid unguis equal and uniserrate, hind equal and simple.

Wings with short fork-cells, nearly equal in length ; the first submarginal narrower than the second posterior, its base a little nearer the apex of the wing, its stem nearly as long as the cell, stem of the second posterior as long as the cell ; about one and a half times its own length distant from the mid. Halteres with a pale testaceous stem, fuscous scales towards the white knob.

*Length*.—6 mm.

*Habitat*.—Balighai, near Puri, Orissa.

*Time of capture*.—24. x. 08 (Annandale).

*Observations*.—Described from a single perfect ♀. It is a typical *Desvoidya*, and can be told at once by the very pronounced apical yellow abdominal bands.

*Type* in the Indian Museum, Calcutta.

### GENUS **BREVIRHYNCHUS.** Theobald (1908).

Rec. Ind. Mus. II., pt. iii., No. 30, 293 (1908), Theobald.

Head clothed with flat scales, also the scutellum, the latter large. Thorax with narrow-curved scales at the edges of the mesonotum, and flat scales towards roots of wings ; prothoracic lobes and pleurae with flat scales. Proboscis of ♀ short, thick, about one-third of the length of the whole insect, curved twice, of the male thinner and slightly longer in proportion ; palpi of the ♀ two-thirds the length of the proboscis, apparently of two segments, the apical long ; palpi of the ♂ longer than the proboscis, acuminate, no hair-tufts, of four segments, the two last nearly equal. Wings with dense scales, some *Taeniorhynchus*-like. Fore unguis of male unequal, the larger uniserrate, mid equal and uniserrate.

A very distinct genus, easily told by the short thick sinuous proboscis of the ♀ and the relatively long palpi, as well as the squamose structure of the thorax with its flat lateral scales. The mid unguis of the ♂ being equal is also characteristic.

The species so far all come from India.

The genus is closely related to *Desvoidya*, but can be told by the longer ♀ palpi and the squamose characters over the wings mentioned on p. 144. Three species so far described which tabulate as below :—

1. Abdomen black, with basal median yellow patches and white triangular lateral spots.  
Legs with faint banding ..... *magnus*. Theobald.
2. Abdomen black, with snowy-white bands near apex of some segments and long thin lateral creamy spots. Legs basal pale bands ..... *annulipalpis*. Theobald.
3. Abdomen with apical yellow bands. Legs brown, narrow apical pale bands ..... *apicalis*. Theobald.

#### BREVIRHYNCHUS MAGNUS. Theobald (1908).

Rec. Ind. Mus. II., pt. iii., No. 30, 293 (1908), Theobald.

Thorax rich brown in the middle with white border all round the front and sides, pleurae densely white scaled ; head black, white around the edge and in the middle ; the short thick proboscis black ; the palpi black, nearly as long as the proboscis. Abdomen black with basal median yellow patches, snowy-white triangular lateral spots, the base of the triangles towards the posterior borders of the segments, but a black line of scales between ; the fifth, sixth and seventh spots yellow at the base ; venter with broad yellow basal bands, narrow black apical ones. Legs blackish with faint traces of banding. Male palpi long and thin, acuminate.

♀. Head clothed with rather large flat dusky black scales, creamy-white ones at the sides, and some black ones below them and then white again, a narrow band passing around the eyes and some pale ones in the middle ; some long golden-brown chaetae projecting forwards ; proboscis short, thick swelling apically (but actual apex acuminate), twice curved, jet black, hairy ; palpi long and thin, about two-thirds the length of the proboscis, the apical segment very long, black, some pale scales below at the apex and traces of others below at the base of the long segment, antennae brown, basal segment with some flat pale scales.

Thorax shiny black clothed with long thin narrow-curved bronzy-brown scales, becoming broader behind and with large narrow-curved white scales in front, and the sides forming a white border around the brown central area ; toward the roots of the wings the white area is composed of large flat white scales and some occur elsewhere passing on to the densely flat white

scaled pleurae, which also bear a median patch of flat black scales; prothoracic lobes covered with flat white scales; chaetae scanty, a patch of golden-brown, much curved ones in front of the roots of the wings, rather short; scutellum with flat dusky scales and some paler ones, scales large; metanotum nude, deep brown except at the apex where it is reddish-testaceous.

Abdomen blackish, here and there the testaceous integument shines through the scales; first two segments plain, third to eighth with basal yellow scales, the third to fifth with median semicircular patches, the others with yellow basal bands, very broad on the last two segments; laterally are large snowy-white triangular patches, the base of the triangle towards the apices of the segments, but cut off from them by narrow apical black scaled lines, the corners of the triangles show on the dorsum as white spots from the third to the seventh segments as almost



Fig. 51.  
Wing of *Brevirhynchus magnus*. ♀. Theobald.

apical spots; border-bristles dusky; on the last five segments the white lateral spots are yellow at the base.

Legs thick, black, paler below, white knee spots and traces of minute pale basal banding, chaetae on the femora and tibiae golden; fore and mid unguis simple, minutely uniserrate.

Wing scales dense, brown, a few pale ones near the base, broad and almost *Taeniorhynchus*-like in places; first submarginal cell longer and narrower than the second posterior cell, its base nearly level with that of the latter, its stem just a little longer than half the length of the cell, stem of the second posterior cell not quite two-thirds the length of the cell; posterior cross-vein sloping towards the base of the wing, twice its own length distant from the mid; the third long vein carried on as a very distinct pseudo-vein to the base of the wing.

*Length.*—6 mm.

♂. Head, thorax and abdomen much like the ♀, but the

flat white scales at the sides of the thorax more numerous and the scutellum has many pale scales, the lateral lobes having them very dense, black at the base, yellow at the apex. Antennae plumose, with flaxen-brown plume-hairs, palest at their base, proboscis rather short, but not so thick as in the female; palpi thin, acuminate, of four segments, the last two nearly equal, dark

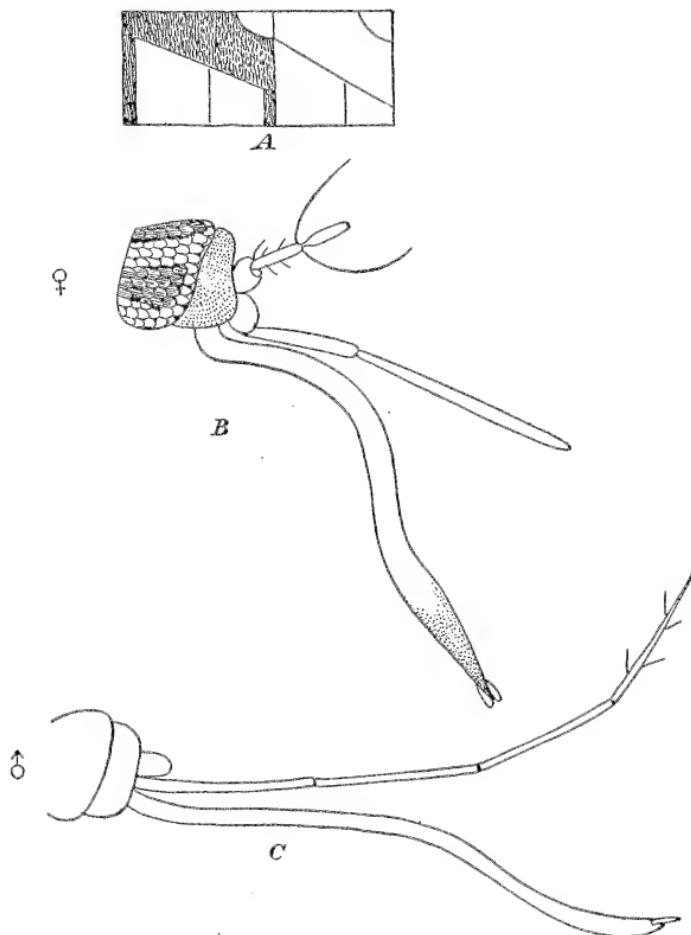


Fig. 52.

*Brevirhynchus magnus*. Theobald.

A, lateral abdominal adornment; B, ♀; and C, ♂ head.

brown with a basal pale band to the segments; no hair-tufts, one or two large chaetae. Legs as in the female, the narrow basal banding rather more distinct; fore unguis very unequal, the larger with a large tooth, the smaller thin and apparently simple, mid unguis equal and uniserrate; hind absent.

*Length*.—6 mm.

*Habitat*.—Sylhet, Assam (Major Hall); Maddathoray, W. base of W. Ghats, Travancore (Annandale) 1 ♀; Sukna, 500 ft., E. Himalayas (N. A.).

*Time of capture*.—May, July and November.

*Observations*.—Described from a single ♂ and a ♀. A most marked and beautiful species easily told by the quaint proboscis and abdominal markings. The hind unguis of the male absent. One specimen in the Indian Museum, Calcutta, was taken in thick jungle by Mr. Annandale at Sukna.

**BREVIRHYNCHUS ANNULIPALPIS.** Theobald (1910).

Rec. Ind. Mus. 6, IV. (1910).

Thorax black with scanty dull golden scales, arranged in rather obscure lines, sides and front of the mesonotum pale scaled; pleurae with patches of white scales. Head black, pale in middle; the rather long palpi black with a snow-white band. Proboscis black, unbanded. Abdomen black with snowy-white bands near the apex of some of the segments, and with long thin lateral creamy spots. Legs dark, with basal pale bands and pale chaetae.

♀. Head clothed with rather large, loose, flat dark scales, showing dull violet reflections, similar creamy ones forming a narrow median area, some creamy ones around the eyes and small almost white lateral flat scales, a few thick black chaetae at the eye borders and golden ones between the eyes; clypeus dark with small flat pale scales; proboscis rather short, thick and uniformly black, metallic. Palpi about half the length of the proboscis, black with metallic violet reflections, a broad white band about the middle and a narrow creamy one nearer the base; antennae black, basal segment and base of the second bright testaceous, the former with small flat dark and creamy scales.

Thorax black clothed with long narrow-curved black, coppery and creamy scales, the latter in rather indistinct lines, sides of the mesonotum with rather broader pale creamy curved scales, which also pass around the front; the scales are larger, long and lanceolate over the roots of the wings, creamy and violet; dense dark brown chaetae also over the roots of the wings; scutellum large, clothed with loosely applied flat violet and creamy scales and with rich brown border-bristles; metanotum shiny black, shagreen over its surface; pleurae brown with irregular patches of creamy-white scales, which extend up to the edge of the pale

areas of the mesonotum; prothoracic lobes with flat creamy-white scales.

Abdomen black with violet reflections, the first segment unbanded, with very fine pale hairs, second segment with a large creamy median basal spot, traces of a pale area on each side near the apex, but not nearly forming a band, the third to fifth segments with almost complete white bands towards the apical borders; a trace of pale scales on the sixth, similar to the second; apical segment with a brassy sheen and some golden-brown chaetae, a yellow lateral line on each segment; venter black and white.

Legs black with white basal bands; femora black, pale beneath, in the hind pair white at the base and below except at the apex; a pale, almost white spot at the base of the fore metatarsals and first two tarsals, in the mid legs the banding is slightly more pronounced, especially on the metatarsi, in the hind legs all the tarsi have basal white bands and the chaetae are prominently pale; unguis equal and simple.

Wings with dense brown scales; the first sub-marginal longer and narrower than the second posterior cell, its base nearer the base of the wing, its stem less than one-third the length of the cell; stem of the second posterior not quite as long as the cell; posterior cross-vein nearly twice its own length distant from the mid; halteres with the stem grey, then fuscous and the knob creamy-white.

*Length*.—5·5 mm.

*Habitat*.—Maddathoray, W. base of W. Ghats, Travancore (Annandale).

*Time of capture*.—16. xi. 03.

*Observations*.—Described from a single perfect ♀. At once told from any other known member of the genus by the banded palpi. The abdomen is relatively long and thin. The proboscis is short and thick but not so bent as in the type of the genus.

*Type* in the Indian Museum, Calcutta.

#### BREVIRHYNCHUS APICALIS. Theobald (1910).

Rec. Ind. Mus. 7, IV. (1910).

Head ochreous with a median and two lateral black patches; proboscis and palpi black. Thorax deep golden-brown scaled with a pale ochreous border around the sides and front; pleurae

brown with creamy patches of scales. Abdomen black, with apical yellow bands, showing some faint traces of a median pale line, lateral median white spots and ochreous venter. Legs brown with narrow apical pale bands.

♀. Head with flat ochreous scales, a small median dark scaled patch in front, then a large and then a small dark scaled lateral patch, borders of the eyes ochreous, golden chaetae projecting between them, brown ones at the sides; eyes coppery-red; clypeus brown, palpi long and thin, black, traces of a narrow pale band towards the base; proboscis black; antennae brown, basal segment bright ferruginous, with small flat grey and fuscous scales, base of the second segment ferruginous.

Thorax black, thickly clothed with narrow-curved deep golden-brown to bronzy scales, with a distinct ochreous border surrounding the sides and front, some paler broader scales and golden-brown chaetae over the roots of the wings; scutellum clothed with flat black and ochraceous scales, mixed together; border-bristles golden; metanotum chestnut-brown; pleurae brown with patches of small flat creamy scales.

Abdomen black, the second to sixth segments with prominent broad yellow apical bands, expanded in the middle, but not continued quite to the edges of the segments, seventh segment with a few pale scales, eighth mostly ochreous scaled; each segment with a median lateral pale spot; venter ochreous.

Legs brown, hind femora pale beneath, apex of tibiae with a pale ochreous spot continued on to the base of the metatarsus, the tibiae with narrow apical and basal yellow bands; fore and mid unguis uniserrate, hind equal and simple.

Wings with rather short fork-cells; the first sub-marginal a little longer and narrower than the second posterior cell, its base slightly nearer the apex of the wing, its stem more than half the length of the cell, stem of the second posterior not quite as long as the cell; posterior cross-vein long, twice its own length distant from the mid. Halteres with pale stem and fuscous knob.

*Length.*—8 mm.

*Habitat.*—Sylhet, Assam (Major Hall).

*Time of capture.*—26. vii. 05.

*Observations.*—Described from a single ♀. It is a large and distinct species easily identified by the apical and basal leg banding, apical abdominal bands and ochreous venter. The length of the palpi and short thick proboscis agree with *Brevirhynchus*,

but the head and thoracic scales although the same general form are not so large as in the other two species. I see no reason, however, to separate it from that genus.

Type in Indian Museum, Calcutta.

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### GENUS STEGOMYIA. Theobald (1901).

Mono. Culicid. I., 283 (1901), III., 130 (1903), and IV., 170 (1907), Theobald.

Thirty-six species are now known in this genus. It seems to occur in the warmer temperate climates, sub-tropics and over all the tropics.

A number of allied genera come around it and they keep on increasing in number, at the same time new species of true Stegomyia continue to be found. One or two still left in this genus may have to be excluded when fresh material is examined. For instance, *S. crassipes*, Van der Wulp, I feel sure does not belong here, but I have not received any fresh material myself.

The species tabulate as follows :—

A. Proboscis banded.

α. Legs basally banded.

Thorax brown, with scattered creamy-white scales ..... *annulirostris*. Theobald.

Thorax black, with narrow-curving golden scales ..... *periskeleta*. Giles.

αα. Legs with basal and apical banding. Fore legs with no bands; mid with apical and basal bands on first tarsal and second tarsal; hind with basal bands.

Thorax white in front, with a brown eye-like spot on each side ..... *thomsoni*. Theobald.

AA. Proboscis unbanded.

β. Legs basally banded.

γ. Abdomen basally banded.

Thorax with one median silvery-white line ..... *scutellaris*. Walker.

Thorax similar, but two white spots near where line ends *gelebeinensis*. n. sp.

Thorax with two median yellow lines and lateral curved silvery lines ..... *fasciata*. Fabricius.

Thorax with two short median lines and a white patch on each side ..... *nigeria*. Theobald.

*A Monograph of Culicidae.*

- Thorax with large lateral white spots in front, smaller ones by wings, two narrow median yellow lines, and two posterior sub-median white lines ..... *lili.* n. sp.
- Thorax with a white W-shaped area in front, a prolongation curved on each side enclosing a brown eye-like spot ..... *W-alba.* Theobald.
- Thorax with white frontal median spot, two large lateral spots, a small one in front of the wings, a narrow median white line and narrow sub-median ones on posterior half. *Last two hind tarsi white* ..... *wellmanii.* n. sp.
- Thorax brown, with broad white line in front extending laterally towards wings, where they swell into a large patch, a white line on each side just past wing roots.  
*Last two hind tarsi white ... albipes.* Theobald.
- Thorax with silvery white spot on each side in front, small one over root of wings, and white over their base. *Last two hind tarsi white* ..... *pseudonigeria.* n. sp.
- Thorax with two lateral white spots, front one the largest, small median one near head, two yellow median lines, a short silvery one on each side before scutellum ..... *simpsoni.* Theobald.
- Thorax with a silvery-white scaled area in front and another each side in front of wings ..... *argenteomaculata.* Theobald.
- Thorax with median yellowish-white line, a silvery patch on each side in front of wings extending as a fine yellow line to scutellum, and another silvery spot before base of each wing ..... *poweri.* Theobald.

- Thorax with small grey scaled area in front of roots of wings and three short creamy lines behind ..... *minutissima*. Theobald.
- Thorax ? (denuded). Abdomen black: 5th segment with yellow basal band; 6th, un-banded; 7th, two median lateral white spots; 8th, two basal lateral white spots; second hind tarsal nearly all white ..... *dubia*. n. sp.
- $\gamma\gamma$ . Abdomen unbanded. Third hind tarsal nearly all white.
- Thorax with two lateral white marks directed upwards ... *africana*. Theobald.\*
- Thorax with white spot in front and another in front of each wing ..... *apicoargentea*. n. sp.\*
- First hind tarsal all white, second basally white, last two dark.
- Thorax chestnut-brown with a broad patch of white scales on each side in front and a median pale line ..... *terrens*. Walker.
- $\beta\beta$ . Legs with white lines as well as basal bands.
- Thorax brown with white lines; abdomen with basal bands ..... *grantii*. Theobald.
- $\beta\beta\beta$ . Fore mid legs with apical bands; hind basal.
- Fourth tarsal of hind legs nearly all white ..... *mediopunctata*. Theobald.
- Mid metatarsi with basal pale banding, base and apex of hind also base of first tarsal *assamensis*. Theobald.
- $\beta\beta\beta\beta$ . Legs unbanded.
- $\delta$ . Abdomen basally banded.
- Thorax front half white, rest bronzy-brown ..... *pseudonivea*. Theobald.

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\* These will have to be removed to *Kingia*. Mr. F. Carter has re-examined *africana*, and finds flat scales in the median line near the head.

- Thorax deep brown, with scattered golden scales, showing two dark eye-like spots; head white, dark on each side and behind ..... *albocephala*. Theobald.
- Thorax brown, with golden stripes; abdomen with narrow basal bands 5th and 6th segments only ..... *auriostriata*. Banks.
- δδ. Abdominal banding indistinct.  
Thorax with broad silvery-white patch on each side in front ..... *albolateralis*. Theobald.
- δδδ. Abdomen unbanded.  
Thorax, six silvery spots ..... *argenteopunctata*. Theobald.
- δδδδ. Abdomen with apical white lateral spots.  
Thorax unadorned, except for pale scaled lines laterally ... *punctolateralis*. Theobald.
- δδδδδ. Abdomen with basal white lateral spots.  
Thorax with two pale indistinct median parallel lines and two silvery lateral spots *minuta*. Theobald.
- Thorax unadorned.  
White spot mid head..... *tripunctata*. Theobald.  
No white spot ..... *amesii*. Ludlow.
- AAA. Proboscis yellow basally, dark apically.  
Abdomen with apical pale bands ... *crassipes*. Van der Wulp.
- AAAA. Proboscis with median interrupted white line on basal half.  
Head black, anterior margin grey ... *albomarginata*. Newstead.

*S. lamberti*, Ventrillon,\* *S. leucomerces*, *S. desmotes*, *S. striocrura*, Giles, of uncertain position.

STEGOMYIA ANNULIROSTRIS. Theobald (1905).

Journ. Bomb. Nat. Hist. Soc. XVI., 239 (1905); Mono. Culicid. IV., 173 (1907), Theobald.

Peradeniya, Ceylon.

Type in the British Museum.

\* *S. lamberti*, Ventrillon (1904), Bull. du Museum, Paris, 552 (1904), Madagascar. Specimens sent me of this species were too damaged on arrival to mount.

## STEGOMYIA (?) PERISKELETA. Giles (1902).

Handbk. Gnats., 2nd ed., 371 (1902); Mono. Culicid. III., 145 (1903),  
Theobald.

India.

I cannot make out this species. It is placed here provisionally only. The type does not exist in the British Museum.

## STEGOMYIA THOMSONI. Theobald (1905).

Gen. Ins. Fam. Culicid., 18 (1905); Mono. Culicid. IV., 174 (1907),  
Theobald.

N.W. Provinces, India.

Type in the British Museum.

## STEGOMYIA SCUTELLARIS. Walker (1859).

*Culex scutellaris*. Walker (1859).

*Culex variegatus*. Doleschall (1858) (non. Schrank,  
1781) (non. Blanchard, 1852).

*Culex albopictus*. Skuse (1895).

Journ. Proc. Linn. Soc. Lond. III., 77 (1859), Walker; Natuurkundig, Tijdschr. v. Ned. Ind. XVII., 77 (1858), Doleschall; Ind. Mus. Notes III., 5, 20 (1895), Skuse; Les Moustiques, 7 (1900), Darutz de Grandpré and d'Emmerez de Charmoy; Mono. Culicid. I., 298 (1901), III., 144 (1903); IV., 179 (1907), Theobald; Poc. Roy. Soc. LXIX., 483 (1902), Theobald; Les. Moust., 257 (1905), Blanchard; Ann. Mus. Nation. Hung. III., 73 (1905), Theobald; Handbk. Gnats., 374 (1902), Giles; Canad. Ento. XXXIV., 299 (1904), Ludlow; Philip. Journ. Sci. I., 9, 985 (1906), Banks; Rec. Ind. Mus. II., pt. iii., No. 30, 291 (1908), Theobald; Ann. Trop. Med. and Par. II., No. 3, 201 (1908) (D'Emmerez de Charmoy).

India; Ceylon; Upper Burma; Siam; Penang; Perak; Selangor; Singapore; Christmas Island; Amboina; N. Borneo; Sarawak; Celebes; British New Guinea and New Guinea generally; Foo Chow, etc., China; Hong Kong; Formosa; Japan; Philippine Islands; Fiji; Pitcairn Islands; Seychelles; Mauritius.

*Additional localities.*—The exact Philippine locality is given by Banks as Pangasinan, Camp Gregg, Bayambang, P.I. (W. P. Chamberlain); Sylhet, Assam (Major Hall); Lushai Hills, Assam (E. C. Macleod); Manipur (C. A. Gourlay); Katihar, Purneah District, N. Bengal (C. A. Paiva); Mauritius (D'Emmerez de Charmoy); numerous specimens from Ceylon (E. Green); West Lake, Hangchow, China (C. E. Cornford),

two ♂'s and sixteen ♀'s; Victoria and Capucin, Seychelles, nineteen ♀'s (P. R. Dupont); Pacific Heights, Honolulu, one ♀ (Terry).

*Date of capture.*—Calcutta in July, August, September and October (N. Annandale); April, May, June and July at Sylhet, Assam; July in Manipur; October at Katihar; April, May, August and September in Ceylon; June at Hangchow, China (21st to 28th); February, March, April in Seychelles (23. ii. 06, 22 and 24. iii. 06, 27. iv. 06); September (xiii. 03) in Honolulu.

*Notes and observations.*—Annandale says of this insect at Calcutta: "Common during the hot weather and the rains, disappearing in winter, active by day." D'Emmerez de Charmoy, speaking of this insect, says, in Mauritius "very common everywhere, certainly the most abundant species of the Island; the larvae occurred in tins, leaves, holes in trees, and in the Ananas Sauvages." Terry, writing from Honolulu, says of this species: "Rarer than the other two mosquitoes (*S. fasciata* and *C. fatigans*), but occurs in town also."

*Type* in the British Museum.

**STEGOMYIA SCUTELLARIS.** Walker.

var. *samarensis*. Ludlow (1903).

Journal New York Ent. Soc., Sept. (1903), Ludlow; Canad. Ento. XXXVI., 71 (1904), Ludlow; *ibid.* XXXVII., 134 (1905), Ludlow; Journ. Phil. Sci. I., 9, 985 (1906), Banks; Mono. Culicid. IV., 179 (1907), Theobald; Mosq. Philip. Isls., 10 (1908), Ludlow.

Samar, Leyte, and Mindoro, in Philippine Islands; Camp McKinlay, Hawaii.

*Additional localities.*—Iloilo, P.I.; Negros, Occidental, Bago, P.I. (Banks); Manila, P.I. (Craig).

*Notes.*—Banks notes that "this seems a widespread mosquito in the Philippines and conforms always with Miss Ludlow's description. *S. scutellaris*, Walker, has never been found by me nor brought in by collectors. The entomological collection, Bureau of Science, contains some very interesting varieties of this sub-species, all bred from the same lot of eggs and to be described later. It would seem very probable that these species, i.e., *S. scutellaris* and *S. fasciata*, may be very closely related and possibly intergradation may occur."

It is scarcely conceivable that these two very marked species or their varieties are likely to interbreed. They are totally distinct in appearance and habits.

## STEGOMYIA GEBELEINENSIS. nov. sp.

Head as in *scutellaris*. Thorax rich brown with a rather broad median white line in front, and where it terminates a small white spot on each side, pleurae white scaled, scutellum white scaled. Abdomen black with narrow basal silvery-white bands on the dorsum and venter. Legs black with narrow basal white bands on some of the joints.

♀. Head as in *scutellaris*. Thorax black, clothed with small narrow-curved bronzy-brown scales, a rather broad median white scaled line, running from the front to about the middle, narrowing posteriorly, where it ends is a small white scaled spot on each side of similar scales, and just interior to these run two indistinct paler scaled lines back to the scutellum, paler scales also before the scutellum, which is covered with flat white scales and has black border-bristles; metanotum dark brown; pleurae dark with dense rather loose flat white scales, especially above; prothoracic lobes with flat white scales.

Legs damaged; the femora white scaled at the base; the mid pair with a narrow pale basal band to the metatarsi and first tarsal.

Wings with typical stegomyia scales; fork-cells short, the first longer and slightly narrower than the second, their bases nearly level, stem of the first nearly as long as the cell; stem of the second as long as the cell; posterior cross vein not quite three times its own length distant from the mid.

Abdomen black with narrow basal snow-white bands which spread out laterally, basal segment all dark scaled; border-bristles pale golden and brown; venter dark with basal white bands.

*Length*.—3·5 mm.

*Habitat*.—Gebelein, Sudan (H. King).

*Observations*.—Described from a damaged ♀. Mr. King

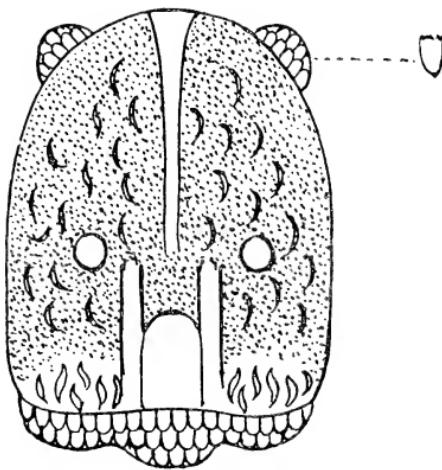


Fig. 53.

*Stegomyia gebeleinensis*, ♀. n. sp.  
Thoracic adornment.

says : " This was the only one I took. It was a perfect specimen when an accident overtook it. I captured it in the act of biting my arm, at dusk, at the foot of the gebels at Gebelein. It appears to be near *S. scutellaris*, but is separated by the two white spots on the mesothorax and the white scales before the scutellum, connected with the spots by traces of white lines. The head agrees with the description of *S. scutellaris*."

It is certainly a very marked species and can at once be told by the thoracic adornment.

*Type* in the British Museum.

STEGOMYIA FASCIATA. Fabricius (1805).

*Culex fasciata*. Fabricius (1805).

*Culex calopus*. Meigen (1818).

*Stegomyia calopus*. Blanchard (1818).

*Stegomyia fasciata*. Fabricius Theobald (1901).

*Culex taeniatus*. Wiedemann (1898).

*Culex elegans*. Ficalbi (1896).

*Culex rossii*. Giles (1899).

*Culex exagitans*. Walker (1856).

*Culex konoupi*. Brullé (1832).

*Culex zonatipes*. Walker (1861).

*Culex formosus*. Walker (1848).

*Culex frater*. Rob. Desvoidy (1887).

*Culex excitans*. Walker (1848).

*Culex viridifrons*. Walker (1848).

*Culex inexorabilis*. Walker (1848).

*Culex bancrofti*. Skuse (1886).

*Culex mosquito*. Arribalzaga (1891).

*Culex annulitarsis*. Macquart (1848).

*Culex imparabilis*. Walker (1860).

Syst. Antliorum, 36, 13 (1805), Fabricius; Mono. Culicid. I., 289 (1901); III., 141 (1903); IV., 176 (1907), Theobald; Rec. Ind. Mus. II., pt. iii., No. 30, 291 (1908), Theobald.

The large number of localities from which this species has been recorded cannot be mentioned here; it occurs in Africa, Asia, Australia, N. and S. America and S. Europe, on most oceanic islands and in all the W. Indies and the E. Indies, in China and Japan.

*Additional localities.*—Phrapatoon, Siam (Dr. P. G. Woolley), 15. iii. 07 and 17, 26, 28 and 29. iii. 07 ; Delagoa Bay, W. Africa (José F. Sant Anna) 2 ♀'s ; Honolulu 2 ♀'s (Terry) ; Andaman Islands 1 ♀ (Ray White). Ferozepore district, Punjab, India 1 ♀ (Major Adie) ; Samarang Java (Jacobson) i. 08 (in Amsterdam Museum) ; Kobus (in Amsterdam Museum), this is labelled *Culex variegatus*. Dol ; Malagna, Spain 1 ♂, 3 ♀'s (per H. J. Ainsworth) ; Lucknow ; Purneah, N. Bengal (C. A. Paira) ; Lushai Hills, Assam (E. C. Macleod) ; Bhim Tal, Kumaon, 4800 ft. (Annandale) (in Ind. Mus. Calcutta) ; Leysdorp, Transvaal (Dr. Copland), 2 ♀'s ; Muscat, Arabia (Brunetti).

The following occur in the Indian Museum, Calcutta :—Calcutta (May, July, August, September and October) ; Lucknow (November). Lushai Hills, Assam (E. C. Macleod) ; Purneah, N. Bengal (August) ; Brim Tal, 4500 ft., Kumaon (September).

*Notes.*—Specimens of this common culicine have been sent me from S. Portugal and thus we may assume that it is Meigen's *calopus*. The name should not be changed however as Fabricius' name *fasciatus* (1805) antedates it. Villiers described a mosquito (1789) as *Culex fasciatus*, there is no type and the description is too vague to decipher, and the species had best be abolished like a lot of others that cannot be definitely identified, and retain the name by which his supposed common gnat is best known. D'Emmerez de Charmoy says this insect is very common near the sea-shore at Port Louis, but rather scarce in the high parts of the Island of Mauritius.

#### STEGOMYIA FASCIATA PERSISTANS. Banks (1906).

Philip. Journ. Sci. I., 9, 996 (1908).

This can only be one of the many varieties of *S. fasciata*.

Banks says of the thorax “a broad, silver-white band on each side, curving outwards, then inward at middle of thorax and extending back to hinder margin as in *S. fasciata*, Fabr. External and parallel to this is a bare or scaleless linear area ; between the lyre-shaped figure thus formed, a very short, median golden-white line from anterior margin of mesothorax, then two parallel, sub-median lines, extending two-thirds of distance to posterior margin, then a short median extending brown, bare spot, then two parallel sub-median short lines at sides of bare spot, extending to posterior margin ; a broken line of white in

front of wings, sub-parallel with hinder curve of lyre-figure, its beginning on pleura."

This is according to Banks the common mosquito in the Philippine Islands. He says concerning *S. fasciata*, Fabr.: "I have never found this species, nor has it been brought to me by any collector. *S. faciata persistans*, Banks, is the form which I have always obtained in various parts of the Philippines."

The first *S. fasciata* sent me by Miss Ludlow from the Philippines was the variety *mosquito*. Others I have had quite typical, and some of the variety *luciensis*, Theobald.

Miss Ludlow \* refers to this sub-species as follows:—"A new variety of *fasciata (calopus)* has lately been founded, i.e., *persistans*, Banks, which Mr. Banks says is the only form taken in the Philippine Islands, but the variety is based on a misconception. Mr. Banks has probably never studied the *Stegomyia* found in the Southern States, and so does not realize that his differences occur merely on account of inaccurate descriptions of *fasciata*. The insect is the same in both countries, except that as far as I have seen them, the specimens from the Philippines seem, as a whole, more clearly marked."

The specimens I have received from the Philippines were typical *fasciata*, and the varieties called *mosquito* and *luciensis*—probably any number of marked varieties can be noticed. But *persistans* is almost typical if not typical of this widely distributed species. It had best be kept as a variety.

#### *STEGOMYIA NIGERIA.* Theobald (1901).

Mono. Culicid. I., 303 (1901).

Bonny, West Africa.

*Additional locality.*—Bailundu, Angola, West Africa (Dr. Creighton Wellman); taken in house at lamps 8 p.m. 14. iv. 05.

*Type* in the British Museum.

#### *STEGOMYIA LILII.* nov. sp.

Head black with snow-white median area and white at the sides; palpi black in ♀ with snow-white apices; proboscis black.

\* "The Mosquitoes of the Philippine Islands: the distribution of certain species and their occurrence in relation to the incidence of certain diseases." P. 8 (1908), Washington D.C.

Thorax black with a large lateral snow-white spot in front, and a smaller one behind before roots of wing; two narrow median yellow and two sub-median white lines run from the middle of mesonotum to the scutellum; scutellum white; pleurae dark with white puncta.

Abdomen black with basal silvery-white bands, last segment with two white spots, no band.

Legs black with basal white bands.

♀. Head clothed with flat black scales, a double row of flat snowy-white ones in the middle and white at the sides, a narrow white border due to reflection around the eyes, thick black chaetae project over the eyes inwards; palpi black with snowy-white apices; proboscis and antennae black. Thorax black, clothed with small narrow-curved black scales, in front on each side a large silvery-white triangular patch of broader scales, behind this a smaller patch just in front of the roots of the wings; from the middle of the mesothorax run backwards two parallel thin yellow lines and two sub-median snowy-white ones, the latter quite reaching the scutellum; chaetae jet black; scutellum clothed with flat silvery-white scales, dusky in some lights; metanotum brown; pleurae black with three prominent silvery-white spots of flat scales.

Abdomen black, the second segment with trace of white basal band, the third, fourth, fifth and sixth with prominent silvery-white basal bands, the seventh with two white basal spots, eighth dark, also the basal segment; chaetae and border-bristles black; venter with broad white basal bands.

Legs black, the fore and mid metatarsals and first tarsals with basal white bands, rest of tarsals black; in the hind legs the femora are pale on the basal half, the black apical half with two silvery-white spots, one apical, the metatarsi and first and second tarsals with basal snowy-white bands, the third all dark, the fourth white.

Wings with dark scales, especially along the outer costal border; fork-cells rather short, the first longer and slightly

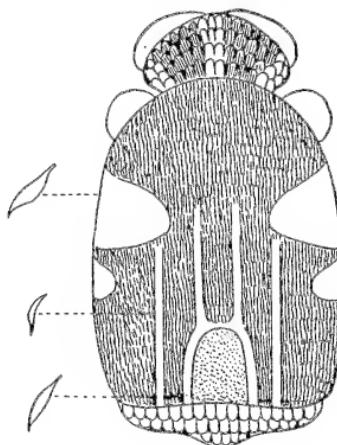


Fig. 54.

*Stegomyia lili*. ♀. n. sp.

narrower than the second, its base slightly nearer the base of the wing, its stem about half the length of the cell, stem of the



Fig. 55.  
*Stegomyia lili.* ♀. n. sp.

second posterior not quite as long as the cell; posterior cross-vein about the same length as the mid, about its own length distant from it.

*Length.*—4·5 mm.

♂. Head as in the ♀; palpi as long as the proboscis, blunt, no hair tufts, a few black bristles, black, a ventral white area at the base of the apical segment, a broad median white band and a narrow basal one; antennae banded black and white with black plume hairs.

Thorax as in the ♀, but the median thin yellow lines curve around the bare space in front of the scutellum and reach it, the last part being composed of broader curved scales.\*

Abdomen and legs as in the ♀; fore and mid unguis unequal and simple; hind equal and simple.

*Length.*—4·5 mm.

*Habitat.*—Bor (H. King).

*Time of capture.*—26. v. 09.

*Observations.*—Described from one ♀ and one ♂. A very marked and beautiful species, identified at once by the thoracic ornamentation.

Mr. Harold King bred them from larvae living in water collected at the base of lily leaves about a mile inland from Bor.

Mr. King noticed in the type as follows: "From beneath the hind unguis on the left leg of the ♀ is a process not present on the right leg."

*Types* in the British Museum.

\* This probably also occurs in the ♀ as there are traces of these larger scales.

STEGOMYIA W-ALBA. Theobald (1905).

Ann. Mus. Nat. Hung. III., 74 (1905); Mono. Culicid. IV., 180 (1907),  
Theobald.

India.

*Type* in the National Museum, Budapest.

STEGOMYIA WELLMANII. nov. sp.

Head jet black with a silvery-white median and lateral areas; proboscis black; palpi black, snowy-white apices. Thorax deep

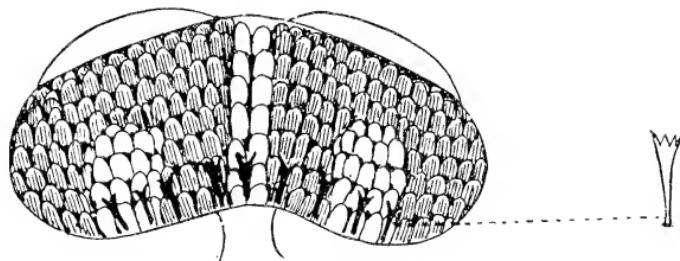


Fig. 56.  
*Stegomyia wellmanii*. ♀. n. sp. Cephalic adornment.

blackish-brown with a small median silvery spot in front, each prothoracic lobe forming another similar sized spot, two large lateral spots further back, then two small ones before wing roots, a narrow white median line and two narrow sub-median ones on the posterior half; silvery-white scutellum and pleural puncta. Abdomen black, basally banded, basal lateral white spots, venter with broad basal white bands. Legs black with snowy-white basal bands, last two hind tarsals all white.

♀. Head black, clothed with flat black scales except for a double row of snowy-white median ones and a lateral basal spot on each side, some brown forked scales posteriorly and black chaetae; clypeus black with snowy-white scaled apices and two lateral black chaetae and a small apical black spine; proboscis jet black.



Fig. 57.  
*Stegomyia wellmanii*. ♀. n. sp.  
Head.

Antennae blackish-brown, basal segment dark, the inner side of the latter with snowy-white scales.

Thorax black, clothed with small narrow-curved bronzy-brown scales, a small median patch of similar shaped white scales against the head, composed of two rows, suddenly narrowing into a thin single median line running back to the bare space in front of the scutellum. A large silvery-white patch of broader curved scales on each side and a thin white line (sub-median) running back from near each side to the scutellum, parallel with the



Fig. 58.  
*Stegomyia wellmanii.* n. sp.  
Thoracic adornment

median line; a smaller white spot in front of the roots of the wings on each side; prothoracic lobes white scaled; scutellum black with flat white scales, showing dull reflections in the middle; all the chaetae jet black; metanotum black; pleurae with prominent white puncta.

Abdomen black, second segment with a narrow creamy basal band, the others with a few basal creamy scales or complete basal bands; the apical with a basal median white spot and prominent basal lateral white spots, there are lateral snowy spots; posterior border-bristles pale golden; venter with prominent basal white bands.

Legs jet black, base of under side of femora white, apex snowy-white, a small white spot at apex of tibiae; fore and mid metatarsi and first tarsals with a basal snowy-white band; in the hind legs the metatarsi, first and second tarsals with a basal

white band, all the last two tarsals white. Fore and mid unguis equal and uniserrate.

Wings with dark scales, rather dense broad linear lateral ones; the first fork-cell considerably long and a little narrower than the second fork-cell, its base slightly nearer the base of the



Fig. 59.  
Wing of *Stegomyia wellmanii*. ♀. n. sp.

wing, its stem about half the length of the cell; stem of the second about two-thirds the length of the cell. Supernumerary cross-vein sloping, the mid parallel to the posterior, the posterior about three times its own length distant from the mid.

*Length*.—5·5 to 6 mm.

*Habitat*.—Bailunder, Angola, West Africa (Dr. Creighton Wellman).

*Time of capture*.—March 1905.

*Observations*.—Described from 3 ♀'s. Caught at tent lamp 8 P.M. The thorax is very marked, and at once separates this species from any other Stegomyian I have seen. The type specimen shows but scanty abdominal banding, the other two show it very plainly, but neither had perfect hind legs.

The scales on the abdomen of the type had been apparently partly denuded, and probably the majority in any case have markedly banded abdomens.

Very near to *S. poweri*, Theobald, from Natal, but differs in (i) the palpi of the ♀ being only white at the apex; (ii) the last two hind tarsals being white; (iii) the relative difference in length of the stem of the second fork-cell.

*Type* in the British Museum.

**STEGOMYIA SIMPSONI.** Theobald (1905).

The Entomologist, XXXIX., 224 (1905); Mono. Culicid. IV., 182 (1907),  
Theobald.

Katema's, Bihé, Angola, 7. ii. 05 (2 ♀'s).

*Type* in the British Museum.

**STEGOMYIA ARGENTEOMACULATA.** Theobald (1907).

Mono. Culicid. IV., 184 (1907).

Nacodam Islands, Bay of Bengal.

*Type* in the British Museum.

**STEGOMYIA POWERI.** Theobald (1905).

Journ. Econ. Biol. I., No. 1, 18 (1905), Theobald; Mono. Culicid. IV.,  
185 (1907), Theobald.

Natal.

*Additional locality.*—Ruhe, Congo Free State, 8. v. 07  
(Dr. A. Yale-Massey), 2 ♀'s. In house.

*Type* in the British Museum.

**STEGOMYIA PSEUDONIGERIA.** nov. sp.

Thorax black with a silvery-white spot on each side in front, a smaller one just before roots of the wings and white scales over their base; scutellum silvery-white. Head black with a median white line and a small white spot on each side; proboscis black, palpi black tipped with snow-white. Abdomen black with basal creamy-white bands. Legs black with broad basal white bands, *last two hind tarsals all white*.

♀. Head black, clothed with flat black scales, except for a broad median line of snowy to silvery-white, a small patch of white scales at the sides and some white scales forming a border around the eyes; pale dusky and black upright forked scales along the nape; a few thick black chaetae projecting forwards; palpi black with snowy-white apices; proboscis black, unbanded; antennae black, the basal segment with a patch of white flat scales on their inner side and a few small black scales on the second segment; clypeus black.

Thorax shiny black, clothed with narrow-curved bronzy-brown scales, a patch of broader snowy-white scales on each side in front, another somewhat smaller behind, close to root of the

wing, some similar shaped snowy scales over the roots of the wings and some on each side of the bare space in front of the scutellum; scutellum black, clothed with large flat snowy-white scales; metanotum black; prothoracic lobes clothed with flat snowy-white scales; pleurae dark brown with snowy-white puncta.

Abdomen black with basal creamy-white bands and pure white lateral basal spots, the basal segment all black, the second, has the basal band, broken in the middle; posterior border-bristles pale golden.

Legs black with violet reflections; femora with a snow-white apex, white below at the base and showing a spot of pale creamy scales; tibiae with a white spot *near their base*, fore metatarsal and first tarsal with a broad basal white band, rest unbanded; mid femora show a white spot near the base, another towards the apex and apex snow-white, rest of mid legs as in the fore; hind legs with a broad basal white band to the metatarsi, first and second tarsals, the last two all white; fore and mid unguis equal and uniserrate, hind equal and simple. (In one specimen the banding on the mid leg showed much wider than in the other two; this is on the under surface.)

Wings with brown scales; first fork-cell slightly longer, but no narrower than the second fork-cell, its base a very little nearer the base of the wing than that of the second, its stem about half the length of the cell, stem of the second fork-cell nearly as long as the cell; posterior cross-vein rather more than three times its own length distant from the mid.

*Length*.—4 to 5 mm.

*Habitat*.—O Wambu, Angola (Dr. Creighton Wellman).

*Time of capture*.—3. iv. 05.

*Observations*.—Described from three ♀'s, one taken in the open at sunset. A very marked species easily told by the leg ornamentation, the white band or spot near the base of the tibiae being very characteristic, in conjunction with the last two hind tarsals being all white. The banding of the legs seems much wider below than above.



Fig. 60.

Wing of *Stegomyia pseudonigra*. ♀. n. sp.

## STEGOMYIA MINUTISSIMA. Theobald (1910).

Rec. Ind. Mus. 9, IV. (1910).

Head black, a white border to eyes and white median spot in front between them; palpi black with white apices; proboscis black. Thorax deep brown with a small grey scaled area in front, grey scales in front of the roots of the wings and three short creamy lines behind. Abdomen black with narrow white basal bands and white lateral spots. Legs dark brown with basal white bands; mid femora with a marked median white spot and white apex; hind femora white at base. Very small species.

♀. Head clothed with flat black scales, a large median triangular white scaled area in front and a pale border to the eyes; clypeus dark brown; palpi black with snowy-white apices; proboscis black; antennae deep brown, basal segment with white scales; some golden-brown chaetae project between the eyes.

Thorax black, the greater surface clothed with bronzy-brown long narrow-curved scales, a small area near the head and a small wedge-shaped area on each side in front of the wings with dull white scales, some pale creamy scales which form three indistinct lines behind in some lights; scutellum with flat black scales with dull violet reflections and some white ones on the lateral lobes; pleurae brown with flat white scaled spots. Chaetae brown and black.

Abdomen black with narrow basal white bands and basal snowy-white lateral spots.

Legs deep brown; the first pair with a basal white band to the first tarsal, the mid with a median white spot on the femora,



Fig. 61.

Wing of *Stegomyia minutissima*. ♀. Theobald.

the apex white and a basal white band to the metatarsal and first tarsal; the hind with the femora white at the base, and all

the segments with a basal white band except the last; some large black chaetae at the apices of the segments in the hind legs; fore and mid unguis uniserrate, hind simple.

Wings with typical large brown Stegomyian scales on the basal region, dense narrow linear ones on the apical areas of the veins; the first sub-marginal cell longer and narrower than the second posterior, their bases nearly level. Stem of the first fork-cell about half the length of the cell; stem of the second posterior about two-thirds the length of the cell; posterior cross-vein nearly twice its own length distant from the mid.

*Length*.—2·5 mm.

*Habitat*.—Sukna, 500 feet, base of E. Himalayas, Darjiling district (N. Annandale).

*Time of capture*.—1. vii. 08.

*Observations*.—Described from three ♀'s. One of the smallest *Stegomyias* I have seen. It can easily be told by the thoracic ornamentation and the white round spot on the femora of the mid legs. One specimen was taken in a bungalow.

*Type* in the Indian Museum, Calcutta.

#### STEGOMYIA ALBIPES. Theobald (1910).

Rec. Ind. Mus. 11, IV. (1910).

Thorax brown, a small silvery-white patch in front and a white scaled line running down to the base of the wings where there is a large snowy-white patch extending on to the dorsum. Head black, white in the middle; palpi black with snowy apex; proboscis black. Abdomen black with narrow basal white bands and large snowy-white lateral basal spots. Legs with broad basal white bands, last two hind tarsi white; mid femora and tibiae with a median white round spot.

♀. Head black, clothed with flat black scales at the sides, white in the middle; chaetae black; proboscis and clypeus black; palpi black with snowy-white apices; antennae dark brown, basal segment with dense flat snowy-white scales.

Thorax dark with narrow-curved deep bronzy-brown scales, snowy-white ones forming a broadish line in front and extending laterally towards the wings before which they spread out into a large white patch which passes on to the dorsum, this is composed of narrow-curved scales above and flat ones below; there is also a white line of narrow-curved scales on each side just past the roots of the wings and a few white scales here and there

before the scutellum ; supra-alar chaetae black ; scutellum clothed with rather large flat snowy-white scales ; metanotum black ; pleurae black with silvery-white puncta.

Abdomen black with narrow basal snowy-white bands and very large basal lateral white spots ; posterior border-bristles pale, short.

Legs black with white bands and spots ; the fore femora pale at the base below, fore tibiae with a white median spot ; knee spot white ; a white band to metatarsi and first tarsals ; mid femora with prominent white median spot (almost a band), a smaller one basally and white apex, metatarsi and first tarsal basally white ; hind femora white basally and on most of the under side, apex white ; tibiae with a white band on the apical half, metatarsi and first two tarsals basally snowy-white, and all the last two tarsals ; chaetae black ; unguis equal and simple.

Wings with dark scales, base pale ; first sub-marginal cell longer and narrower than the second posterior, its base nearer the base of the wing, its stem about half the length of the cell ; stem of the second posterior about as long as the cell ; posterior cross-vein rather more than twice its own length distant from the mid. Halteres with testaceous stem and deep fuscous knob.

*Length.*—3 mm.

*Habitat.*—Maddathoray, W. base of W. Ghats, Travancore (N. Annandale).

*Time of capture:*—17. xi. 08.

*Observations.*—Described from a perfect ♀. At once separated from any other *Stegomyia*, except *pseudonigeria*, by the last two hind tarsals being white and by the thoracic ornamentation, especially by the pre-alar white patch being composed of narrow-curved scales above, flat ones below. The femoral and tibial markings are also very distinctive.

*Type* in the Indian Museum, Calcutta.

#### STEGOMYIA DUBIA. nov. sp.

♀. Head black, with pale median and lateral areas and silvery-white around the eyes ; clypeus, proboscis and antennae black ; palpi black with snow-white apices.

Thorax black (denuded), some flat white lateral scales ; black and white scales on lateral lobes of scutellum.

Abdomen black, the fifth segment with yellow basal band and

white lateral spots, sixth unbanded, seventh with median lateral white spots, eighth with two basal lateral white spots.

Legs black, fore and mid with small basal pale bands to the metatarsi and first and second tarsals; hind legs with a broad white basal metatarsal band, a narrower white band to the first tarsal, the second tarsal nearly all white, third with a narrow basal white band, fourth with a trace; fore and mid unguis equal and uniserrate; hind equal and simple.

Wings with brown scales; the first long vein curved at its apex; the first fork-cell much longer and slightly narrower than the second fork-cell, its base slightly nearer the base of the wing than that of the second fork-cell; its stem about one-third the



Fig. 62.  
Wing of *Stegomyia dubia*. ♀. n. sp.

length of the cell, stem of the second fork-cell slightly more than half the length of the cell; posterior cross-vein sloping backwards parallel with the mid, about twice its own length distant from it. Wing scales almost *Taeniorhynchus*-like.

*Length*.—4 mm.

*Habitat*.—Katemár, Bihé, Angola (Dr. Creighton-Wellman).

*Time of capture*.—3. ii. 05 (10 A.M.).

*Observations*.—Described from a worn and damaged ♀, but the marked leg ornamentation and wing venation should at once separate it. The second hind tarsal being nearly all white, and the curious bend in the first long vein near the apex are the essential characters. It is evidently a *Stegomyia* from the cephalic ornamentation.

*Type* in the British Museum.

## STEGOMYIA AFRICANA. Theobald (1901).\*

Mono. Culicid. I., 304 (1901), IV., 188 (1907), Theobald.

Mashonaland, Sierra Leone, Lagos, Zoruta, Congo Free State, Old Calabar.

*Additional locality.*—Bank of Kukema River, Bihé, Angola, 30. i. and 3. ii. 05 (2 ♀'s) (Wellman).

## STEGOMYIA APICOARGENTEA. nov. sp.

Head black with silvery-white central spot and white eye-borders ; palpi and proboscis deep brown, the former snow-white at apex. Thorax deep brown with two large round silvery-white spots and a small anterior median one ; prothoracic lobes white, and a small white spot at the base of the wings ; pleurae with white puncta. Abdomen dusky black, last three segments with basal silvery spots, all the segments with basal lateral silvery spots, and the venter with basal white bands. Fore and mid legs with basal creamy bands to metatarsi and first tarsal ; hind with an additional band on the second tarsal, and nearly all the third white ; femora of fore and mid legs with a white spot below near apex, apex white ; in the hind legs base of under side white, and also apex and the tibiae have a white spot beneath near base.

♀. Head clothed with black scales ; a median line of white scales, white scales around the eyes and at the back, at the sides some dark upright forked scales and black chaetae. Clypeus and proboscis black ; palpi black with snowy-white apical scales ; antennae black, the second segment with black scales ; eyes coppery.

Thorax black, with long narrow-curved bronzy scales, a silvery-white median patch in front, two silvery spots about the middle, and a small patch on each side in front of the roots of the wings, composed of densely packed spindle-shaped scales, deep brown chaetae over the roots of the wings and behind ; scutellum with large black and white flat scales and brown border-bristles ; metanotum black ; prothoracic lobes with flat white scales ; pleurae deep brown with patches of flat white scales.

Abdomen deep brownish black, the fifth to seventh segments with large silvery-white basal patches, and a small one on the

\* This must be removed to the genus *Kingia*, owing to the flat scaled median area on the thorax.

eighth segment; border-bristles dark; each segment with basal white lateral patches, large on basal segments, becoming linear on the apical ones, venter dark with broad basal white bands.

Legs dark with basal banding; the fore and mid metatarsi and first tarsal segments with basal creamy bands; the fore femora with traces of white scales near the apex forming a spot, very prominent on mid femora, apex white especially in the mid legs, paler scales below at the base; hind femora white below at the base and apex; metatarsi and first two tarsals with basal white bands, nearly all the third tarsals white, apical one black; unguis of fore and mid legs equal and uniserrate, hind equal and simple.

Wings with the first submarginal cell longer and narrower than the second posterior cell, its base nearer the base of the wing, its stem about one-third the length of the cell, stem of the



Fig. 63.  
Wing of *Stegomyia apicoargentea*. ♀. nov. sp.

second posterior more than half the length of the cell; posterior cross-vein not quite three times its own length distant from the mid. Halteres with base of stem ferruginous, apex fuscous and also knob.

*Length*.—4 mm.

*Time of capture*.—7. viii. 07 and 9. ix. 07.

*Habitat*.—Obuasi and Kumasi (Dr. Graham).

*Observations*.—Two ♀'s both taken in bush, one at 5 p.m. at Kumasi. Dr. Graham says specimens taken in bush paths outside Obuasi and outside Kumasi in August and October, from 2 to 5 p.m. Described from a perfect ♀. The marked thoracic ornamentation and the leg banding combined will at once separate it from all other African *Stegomyia*.

*Type* in the British Museum.

STEGOMYIA TERRENS. Walker (1856) ♂.  
*Culex terrens.* Walker (1856).

Ins. Saund. 429 (1856), Walker (1856); Mono. Culicid. I., 305 and 423 (1901), Theobald.

S. America.

*Type* in the British Museum.

STEGOMYIA GRANTII. Theobald (1901).

Mono. Culicidae I., 306 (1901); Nat. Hist. Sokotra, 360 (1903).

Sokotra.

*Type* in the British Museum.

STEGOMYIA MEDIOPUNCTATA. Theobald (1905).

Journ. Bombay Nat. Hist. Soc. XVI., 240 (1905); Mono. Culicid. IV., 187 (1907), Theobald.

Peradeniya, Ceylon.

*Type* in the British Museum.

STEGOMYIA ASSAMENSIS. Theobald (1908).

Rec. Ind. Mus. II., pt. iii., No. 30, 290 (1908); Theobald.

Thorax deep brown, a white scaled area in front less than one-fourth the area of the mesothorax and a small scaled patch in front of the root of each wing. Abdomen deep brown, unbanded with basal lateral white spots, the scales raggedly arranged below. Legs brown, a pale spot near apex of fore and mid tibiae, a basal pale band to mid metatarsi, hind femora pale, except for a brown band in the middle, base and apex of metatarsi white, base of first hind tarsal white. Proboscis deep brown.

♀. Head black, clothed with flat black scales and some white ones in the middle, a narrow line around the eyes and at the sides, and short thick black chaetae in front projecting forwards and inwards over the eyes, which are large and silvery, palpi black scaled, traces of some paler scales apically, proboscis black, antennae dark brown, basal segment with grey tomentum.

Thorax shiny black, clothed with bronzy-brown narrow curved scales, except for a small area in front which has pale creamy-white scales and a small white scaled area on each side in

ront of the roots of the wings passing up on to the mesonotum some short distance, and a small patch of pale scales in front of the bare space before the scutellum; chaetae black to dark brown; scutellum testaceous with flat dusky scales and rich brown border-bristles, pleurae rich brown with silvery-white puncta.

Abdomen deep brown, unbanded with basal lateral white spots and rather long dusky border-bristles; venter black with basal white bands, the scales long and outstanding giving a ragged appearance.

Legs brown and banded; fore and mid legs with the femora pale at the base and below, the tibiae with a creamy area before the apex which is black, this is most marked in the fore pair; the rest of fore legs unbanded, but in the mid the metatarsus has a pale basal band; femora of the hind legs pale creamy with a broad dark band on the apical half, base and apex of the metatarsus with a pale band, also the base of the first tarsal, remainder dark, fore and mid unguis equal and uniserrate; the hind equal and simple.

Wings with brown scales, the lateral ones dense and rather flattened; fork-cells short, the first a little longer and narrower than the second, its base very slightly nearer the base of the wing than that of the second posterior; its stem not quite as long as the cell; stem of the second posterior as long as the cell; supernumerary and mid cross-veins in a straight line, posterior cross-vein about two and a half times its own length distant from the mid.

*Length*.—3 to 4·5 mm.

*Habitat*.—Sylhet, Assam (Major Hall); Pallode, 20 miles N.E. of Trivandrum, Travancore (N. Annandale).

*Time of capture*.—13. iv. 05; 15. xi. 08.

*Observations*.—Described from a single ♀. The adornment of the thorax and legs will at once separate it from others of this genus.

It presents certain aberrations which however are not sufficient to separate it on one-sex characters alone from *Stegomyia*. These characters are the long raggedly arranged ventral scales, the somewhat longer palpi and the somewhat broader wing scales, these differences are however more of size than of structure.

*Type* in the Indian Museum, Calcutta.

## STEGOMYIA PSEUDONIVEA. Theobald (1905).

Ann. Mus. Nat. Hung. III., 75 (1905), ♀, Theobald ; Mono. Culicid. IV., 188 (1907), Theobald. ♀.

♂. Like the ♀ in general ornamentation. Palpi deep brown about as long as the deep brown proboscis ; the apical segment not as long as the penultimate segment, and narrower, with scanty hair tufts. Antennae with brown plume hairs.

Head showing pale greyish-brown reflections in some lights, many dark upright forked scales at the back along the nape.



Fig. 64.  
*Stegomyia pseudonivea.* ♂. Theobald. Head.

Fore unges unequal, the larger with two teeth, the smaller with one ; mid both uniserrate ; hind equal and simple.

Wings with the first fork-cell longer and narrower than the second, its base slightly nearer the apex of the wing than that of the second, its stem nearly as long as the cell ; stem of the second fork-cell as long as the cell ; posterior cross-vein about twice its own length distant from the mid. Genitalia densely covered with scales on the basal lobes and overhanging them, basal lobes beneath hairy, claspers small, curved with long thin apical segment.

*Length.—3·5 mm.*

*Habitat*.—Andaman Islands (Lowis). 5 ♀'s and 4 ♂'s.

*Type* of ♀ in the National Museum, Budapest. The ♂ first described here is in the British Museum.

*Observations*.—The genitalia are very marked, and can only be seen by freeing the last segments of scales, the basal lobe



Fig. 65.

Male genitalia of *Stegomyia pseudonivea*. ♂. Theobald.

being densely scaly as well, and having dense fine hairs beneath the scales.

The type ♀ came from Singapore.

#### STEGOMYIA ALBOMARGINATA. Newstead (1907).

Ann. Trop. Med. and Parasit. I., No. 1, 16 (1907).

"Head black, anterior margin white. Thorax grey-brown; pleurae grey. Abdomen dark brown with lateral grey angular spots to the fifth segment (remaining segments wanting); venter pure white. Legs pale bronzy-brown; femora white beneath; hind femora entirely so."

♀. Head with flat scales uniformly olivaceous-black with dull bronzy reflections, with a well-defined continuous margin of

white ones, broadening towards the base; there is also a napal patch of loose flat dusky-white scales and below them a few narrow-curved and very short upright forked ones; clypeus black. Palpi shining bronzy-black. Proboscis with bronzy-brown and ochreous scales, basal half with a median, interrupted line of white scales. Antennae with the basal segment greyish-black, second segment pale brown, remaining segments darker; hairs dark brown or black, pubescence white. Thorax: prothoracic lobes clothed with pure white scales; mesothoracic scales

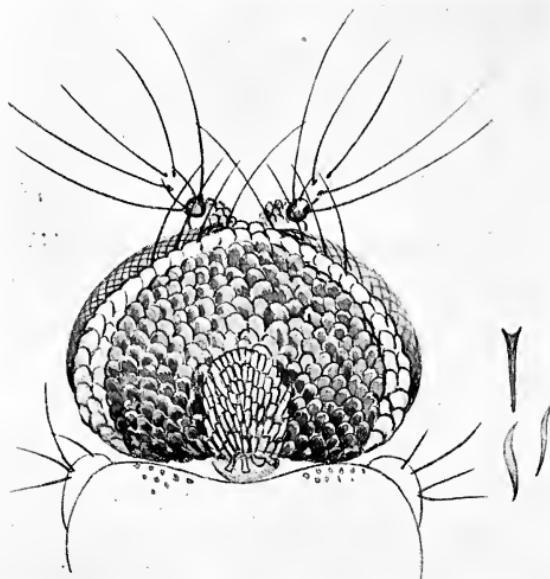


Fig. 66.  
*Stegomyia albomarginata*. ♀. Newstead.  
Head (after Newstead).

in front narrow-curved, white; dorsally the whole area is sparsely clothed with narrow-curved dark-brown scales intermixed at the sides and posteriorly with a few greyish ones; scutellar scales dull white, with a few shorter black ones at the base of the mid lobe, and also at the base of the marginal hairs to the lateral lobes.

Abdomen with the first four segments brownish-black; a few dull white scales on the base of the fourth indicating the presence of a more or less imperfect basal band; venter uniformly white as far as the end of the fourth segment; the remaining segments wanting.

Legs with the coxae dusky-brown, paler apically with numerous flat white scales; scales to anterior and mid femora smoky-brown above, ventrally they are white; hind femora clothed with white scales, except a narrow dorsal and a broad apical anterior patch of blackish scales; tibiae and tarsi of anterior and mid tarsi blackish; posterior tibiae with a broad apical white band, tarsi wanting. Wings with dark bronzy-brown scales, those on the costa much the darkest, almost black; first sub-marginal cell much longer than the second posterior; posterior cross-vein nearly three times its length from the mid.

*Length*.—About 4 mm.

*Habitat*.—Kasongo, Congo Free State."

*Observations*.—Described by Newstead from two specimens caught during the day in a European's house.

*Type* in the collection of School of Tropical Medicine, Liverpool.

**STEGOMYIA ALBOLATERALIS.** Theobald (1908).

Rec. Ind. Mus. II., pt. iii., No. 30, 289 (1908), Theobald.

Thorax blackish-brown with a broad silvery-white patch on each side in front. Abdomen black with basal white lateral spots and traces of basal bandings on the apical segments. Legs and proboscis deep blackish-brown, unbanded.

♀. Head clothed with flat dark brown scales, a few grey ones around the eyes and creamy ones at the sides, clypeus black, nude, with a distinct short-pointed process on each side; palpi and proboscis deep brown to black; antennae deep brown. Thorax black with narrow-curved bronzy scales except at the sides in front, where they are silvery-white, forming two rectangular shoulder patches, and a few of the same coloured scales pass around the front of the thorax next the head, and there are a few dull creamy ones scattered about before the scutellum and traces of a short pale scaled line on each side, the scales behind are larger than those in front, chaetae black in front, dull golden over the roots of the wings, scutellum black with flat black scales and golden-brown border-bristles, metanotum shiny and black; prothoracic lobes with flat shiny white scales, pleurae with spots of flat silvery-white scales.

Abdomen black with basal lateral silvery-white spots which may spread upwards so as to form indistinct basal white bands

on the last one or two apical segments, venter with broad basal white bands.

Legs blackish-brown, unbanded, coxae and venter of fore and mid femora pale, the former with silvery-white scales, hind femora pale creamy-white for about two-thirds of their length, fore and mid unguis equal and uniserrate.

Wings with fork-cells of moderate length, the first submarginal a little longer but scarcely narrower than the second posterior cell, its base slightly nearer the apex than that of the latter, its stem a little more than half the length of the cell, stem

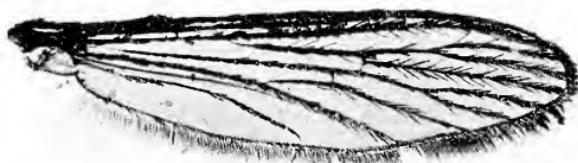


Fig. 67.

Wing of *Stegomyia albilateralis*. ♀. Theobald.

of the second posterior cell more than two-thirds the length of the cell, posterior cross-vein sloping towards the apex of the wing, about twice its own length distant from the mid. Lateral vein-scales long and thin, especially on the third vein.

*Habitat*.—Sylhet, Assam (Major Hall) and Lungleb.

*Time of capture*.—July at Lungleb, September at Sylhet.

*Observations*.—Described from five ♀'s. It is a very marked *Stegomyia*, easily told by the thoracic adornment. One of the specimens shows some additional prominent adornment on the back of the thorax before the scutellum and a dull creamy patch of scales just behind the root of the wings.

The specimen from Lungleb was taken in a bungalow.

*Type* in the Indian Museum, Calcutta.

#### STEGOMYIA ALBOCEPHALA. Theobald (1901).

Mono. Culicid. III., 140 (1901), Theobald.

Gambia.

*Type* in the British Museum.

## STEGOMYIA AUROSTRIATA. Banks (1906).

Philippine Journal Science, I., 9, 995 (1906).

Head with black-brown and white scales. Thorax brown with golden stripes. Abdomen dark brown, light, almost white ventrally. Legs dark brown except femora, which are pale.

"The mesothorax with dark-seal-brown, narrow-curved scales and adorned as follows:—A very narrow, golden median line, scarcely perceptible anteriorly, extending from anterior to posterior margin, where it dilates to cover the area of the usually bare spot; external to this a broad, golden band, curving outward on each side of the anterior half and slightly inward on the posterior half of the dorsal area, the two being parallel posteriorly, and suggesting the lyre-figure of *S. fasciata*, Fabr. External to these lines and anterior to base of wing a faintly suggested longitudinal stripe of golden scales. . . . Mid lobe of scutellum with median patch of flat, yellow-white scales bordered by dark brown ones and four large bristles; lateral lobes with few mixed yellow, white and brown scales and three large bristles each. Abdomen with narrow basal white bands on the fifth and sixth segments and all except last with basal white triangular patches. Fore and mid unguis uniserrate; hind equal and simple.

*Habitat*.—Negros Occidental, P. I., Canlaon Volcano, Mt. Siya-Siya, 760 metres.

*Time of capture*.—24. vi. 06.

*Type*.—Ent. Coll. Bur. Sc. Manila, P. I.

*Note*.—Caught on bare legs of carriers; attacks readily; caught on rainy day."

This is clearly a distinct species.

## STEGOMYIA ARGENTEOPUNCTATA. Theobald (1901).

Mono. Culicid. I., 316 (1901), Theobald; Third Rep. Wells. Labs., 255 (1908), Theobald.

Salisbury, Mashonaland.

*Additional locality*.—Nasser, Sobat River, Africa (King). One ♀.

*Type* in the British Museum.

**STEGOMYIA PUNCTOLATERALIS.** Theobald (1903).

Entomologist, XXXVI., 156 (1903), Theobald; Journ. Trop. Med. VII., 367 (1904), Giles; Gen. Ins. Culicid., 10 (1905), Theobald; Mono. Culicid. IV., 189 (1907), Theobald; Phil. Journ. Sci. I., 9, 984 (1906), Banks; Anns. Queensland Museum, No. 8, p. 22 (1908), Bancroft.

South Queensland.

*Additional locality.*—Pampanga, Camp Stotensberg, Angeles, P. I. (E. R. Whitmore).

*Notes.*—Dr. Bancroft says of this species: “This is rather a rare species in the vicinity of Brisbane, at any rate; it is a biting mosquito, produces a shrill note altogether different from the hum of other mosquitoes. When resting the hind legs are cocked up and bent forwards. It oviposits in a long narrow raft,\* jet black in colour and very like that of *Culex tigripes*; the larvae are found occasionally in water-butts and tanks; in appearance and habits they resemble those of *S. fasciata* and *S. notoscripta*, feeding and spending most of their time at the bottom, in contradistinction to *Culex* larvae, which live for the greater portion of their life on the surface. Grey in colour, black bristles, brown head, black, and joint and short black siphon.”

*Type* in the British Museum.

**STEGOMYIA MINUTA.** Theobald (1901).

Mono. Culicid. I., 319 (1901).

Salisbury, Mashonaland.

*Type* in the British Museum.

**STEGOMYIA TRIPUNCTATA.** Theobald (1908).

Rec. Ind. Mus. II., pt. iii., No. 30, 268 (1908), Theobald.

Head black with three silvery white spots, one median in front and one on each side, proboscis and palpi black. Thorax black with dull bronzy scales; prothoracic lobes white scaled. Abdomen black with basal lateral white spots which meet on the dorsum on the fifth and sixth segments to form basal bands. Legs black, unbanded.

♀. Head black, clothed with flat black scales except for a snowy-white area in front between the eyes and a patch on each

\* This is a most unusual character in *Stegomyia*, the eggs being laid separately in all that have so far been traced. A further examination of the type may show that the squamose characters exclude it from this genus.

side of somewhat less shiny hue, chaetae black, two projecting forwards between the eyes, two curving downwards over the basal segments of the antennae, eyes coppery and golden, clypeus brown, shiny; proboscis thin and black; palpi short, black scaled and with black chaetae; antennae dark brown, verticillate areas pale, base of second segment testaceous, basal segment black shiny with some small curved black chaetae.

Thorax shiny black, with rather large narrow-curved bronzy scales and some paler areas here and there, prothoracic lobes



Fig. 68.  
Wing of *Stegomyia tripunctata*. ♀. Theobald.

covered with flat silvery-white scales, scutellum testaceous with flat black scales, metanotum black, pleurae black with silvery-white flat scales forming a long patch and two spots.

Abdomen narrow, black scaled with basal white lateral patches, which meet on the fifth and sixth segments to form basal white bands, border-bristles small and pale.

Legs deep brown with bronzy reflections, venter of femora and coxae pale, unguis small, equal and simple.

Wings with dense brown scales almost *Taeniorhynchus*-like in form, first sub-marginal cell much longer, but scarcely narrower, than the second posterior cell, its base much nearer the base of the wing than that of the second posterior, its stem not quite a fourth the length of the cell, stem of the second posterior about two-thirds the length of the cell, posterior cross-vein slightly more than its own length distant from the mid.

*Length*.—3 mm.

*Habitat*.—Lushai Hills, Assam (E. C. Macleod).

*Time of capture*.—6. vi. 04.

*Observations*.—Described from two females. It comes very near *Stegomyia amesii*, Ludlow, but can at once be told by having a large white spot in the middle of the front of the head. One specimen shows some pallid scales on the mid lobe of the scutellum and the white lateral spots do not form bands at all.

**STEGOMYIA AMESII.** Ludlow (1903).

*Stegomyia nivea v. amesii.* Ludlow (1903).

Journ. N.Y. Ent. Soc. XI., 139 (1903), Ludlow; Gen. Ins. Culicid., 19 (1905), Theobald; Philip. Journ. Sci. I., 9, 984 (1906), Banks; Mono. Culicid. IV., 191 (1907), Theobald; Mosq. Philip. Isls., 10 (1908), Ludlow.

Philippine Islands.

*Note.*—Banks refers to this in his list as *Stegomyia nivea amesii*, Ludlow.

**STEGOMYIA CRASSIPES.** Van der Wulp (1892).

*Culex crassipes.* Van der Wulp (1892).

Dipt. der Midd. Sumatra, 9 (1892), Van der Wulp; Mono. Culicid. I., 320 (1901), Theobald; Handbk. of Gnats, 381, 2nd ed. (1902), Giles; Journ. Trop. Med. VII., 367 (1904), Giles; Gen. Ins. Culicid., 19 (1905), Theobald; Les Moust., 258 (1905), Blanchard; Phil. Journ. Sci. I., 9, 984 (1906), Banks.

Soeroelaugoen, Sumatra; Upper Burma.

*Additional locality.*—Pampanga, Camp Stotensberg, Angeles, P. I. (E. R. Whitmore) (in Banks).

**STEGOMYIA LAMBERTI.** Ventrillon (1904).

Bull. de Mus. d'Hist. Nat., No. 8, 550 (1904), Ventrillon.

Madagascar. I have not had time to tabulate this species.

**STEGOMYIA (?) LEUCOMERES.** Giles (1904).

Journ. Trop. Med. VII., p. 367, Dec. 1 (1904).

" This species closely resembles *S. albocephala*, but differs from that species in the abdominal terga being jet black, without lateral spots, while the venter, instead of being black, has brilliant broad white basal bands. The wings, tarsi, proboscis, and abdominal terga are absolutely unadorned, and the thorax is rather like that of *S. gubernatoris*, having large external spots, and median linear ornament in front, and some other white markings behind.

♀. The occiput is white, with a large central flat scaled black patch on the nape, notched somewhat in front in the middle. Proboscis, palpi, and antennae sooty; pleurae mainly white scaled. Almost the inner half of the hind femora is pure white above, and even more extensively so below, and the bases of the other femora and the apices of all of them show-white spots. Scutellum with flat black scales. The hinder abdominal segments are much compressed

and of rather peculiar form. The details of the adornment of the head and thorax seem to vary a good deal, the head in one specimen being all black, but for a pair of small white spots behind the eyes, and in others the mesonotum appears entirely white scaled. Rather above the medium size.

*Habitat.*—The Philippine Islands. ‘Taken in the woods.’”

*Type* in the British Museum.

Mr. F. Carter has examined the type of this species again for me, and notes “ very bad specimen, no scales on thorax, and few on the scutellum. The head scales all flat, and a few dark flat ones may be seen on scutellum. Probably a *Stegomyia*.” When I saw the type I could not place such a specimen anywhere as it was mostly denuded, and in consequence, as the description is of little value, I place it as an obscure species ; but as Carter says, probably in this genus. Banks \* gives the locality Pampanga, Camp Stotsenberg, Angeles, P. I. (E. R. Whitmore).

**STEGOMYIA STRIOCRURA.** Giles (1904).

Journ. Trop. Med. VII., p. 367, Dec. 1 (1904).

“ Much resembles the above, but the hind femora have a narrow continuous black stripe above, no light apical femoral spots, and the general coloration is deep chocolate in place of the jet black. The head differs in being nearly black, with a very narrow white border behind the eyes and a minute white patch on the nape. The mesonotum is clothed with deep brown scales in the middle, with a complete border of bushy golden-yellow scales. A rather large species.

*Habitat.*—The Philippine Islands. ‘Caught in the woods.’”

The type of this is not in the British Museum, and probably must sink with the former. No one could identify the Culicid from the description. Banks gives the locality as Pampanga, Camp Stotsenberg, Angeles, P. I. (E. R. Whitmore).

**STEGOMYIA (?) DESMOTES.** Giles (1904).

Journ. Trop. Med. VII., p. 367, Dec. 1 (1904).

Wing very densely scaled; internal fringe mainly white, at least in certain lights. Tarsal joints with broad articular bands, except

\* A List of Philippine Culicidae with descriptions of some new species. Phil. Journ. Sci. I., 9, 977–1005 (1906).

the last two or three joints of fore and middle legs; last two hind tarsals all white, but for a narrow black band on the middle of the fourth joint. Thorax with white curved scales on a dark ground, too denuded to define ornamentation, if any. Abdomen with narrow snowy basal bands and large lateral basal spots. Proboscis unbanded. Generally resembles the *S. fasciata* group, but differs in all the tibiae having broad white bands.

♀. Head with a broad median patch of flat white scales; basal joints of antennae conspicuously white scaled; apices of palpi clothed with bushy white scales. Pleurae with numerous white patches; scutellum white scaled. There are several conspicuous white dots on the hind and middle femora, and the bases of the hind ones are extensively, and of the middle pair narrowly, white; venter black with broad white basal bands. A very minute species.

*Habitat*.—The Philippine Islands. “ Taken in the woods.”

*Type* in the British Museum.

*Note*.—Mr. Carter has examined the type of this species and says as follows:—“ Head has flat scales; scutellum partly denuded, but many flat scales are present towards the margin and several narrow-curved ones at the base; these however have the appearance of having been brushed off from the thorax.”

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#### GENUS **PSEUDOCARROLLIA.** Theobald (1910).

Rec. Ind. Mus. 12, IV., 1910.

Head clothed with flat scales and upright forked scales, a border of spindle-shaped scales around the eyes. Palpi of ♀ about one-fourth the length of the proboscis. Thorax with narrow-curved scales; scutellum with flat scales. Abdomen with dense ventral scale tufts on some of the apical segments. Fork-cell rather short, vein scales rather thick.

Allied to *Carrollia* (Lutz), but differs in having the scutellum with all flat scales and in the absence of narrow curved scales forming a median basal area on the head.

The marked ventral abdominal scale tufts resemble those of *Carrollia* and *Haemagogus*.

#### **PSEUDOCARROLLIA LOPHOVENTRALIS.** Theobald (1910).

Ind. Mus. Rec. 13, IV., 1910.

Head black, a white border to eyes, eyes silvery above; proboscis and palpi jet-black; thorax with the front bright

silvery-white, also the scutellum, the posterior half of the mesonotum rich brown; pleurae with silvery-white puncta. Abdomen black with a dull greenish tinge, basal lateral snow-white spots and basal white ventral bands, and ventral black scale tufts. Legs banded with white, base and apex of metatarsi white, also base of the front and hind first tarsal, base and apex of the mid; femora white at base and with a white apical spot on hind pair.

♀. Head black, clothed with flat black scales and a narrow border of spindle-shaped white ones around the eyes, narrow black upright forked scales and black chaetae projecting forwards; clypeus, palpi, antennae and proboscis all deep black; eyes silvery around the edges, black in the centre.

Thorax black, clothed on the front half with dense long narrow-curved snowy-white scales, not quite extending to the pleurae on each side, forming more of a large round patch, remainder of mesonotum with rich bronzy scales, except for a few snowy-white ones over the roots of the wings; supra alar chaetae long and black; scutellum black, thickly clothed with snowy-white flat scales and golden border-bristles; pleurae rich brown, with six or seven white spots; metanotum black.

Abdomen black, with the scales black, showing in some lights green and peacock-blue reflections, the green mainly at the tips of the scales; the segments with prominent basal lateral snow-white spots, six on each side, last segment small, basally white; posterior border-bristles pale; venter black with snow-white basal bands, the fifth to seventh segments with dense black outstanding scales, giving a tufted appearance.

Legs black with white bands; front legs with apex of tibiae and metatarsi white and base of first tarsal; mid legs with femora white at the base ventrally, a small white apical spot; a white spot at the apex of tibiae, a white band at base and apex of metatarsi, also base and apex of first tarsal and a trace at the base of the second tarsal; in the hind legs the base of the femora are snowy-white and there is a large white apical band, and the base and apex of the metatarsi banded white, also base of first tarsal; leg bristles black; fore and mid unguis uniserrate, hind single.

Wings with short fork-cells, the first sub-marginal narrower but no longer than the second posterior, its stem more than half the length of the cell; stem of the second posterior also more than half the length of the cell; posterior cross-vein about twice

its own length distant from the mid, the latter and the supernumerary in a straight line ; scales brown, rather dense on the branches of the fork-cells. Halteres with testaceous stems and fuscous knobs.

*Length.*—5·5 mm.

*Habitat.*—Purneah, N. Bengal (C. Paiva).

*Time of capture.*—6. viii. 07 (1 ♀).

*Observations.*—Described from a single perfect ♀. It clearly comes in a new genus, related to Lutz's *Carrollia*. The very marked thoracic, abdominal and leg ornamentation will at once separate it from any species coming in the *Stegomyia* group. The ventral abdominal tufts are very marked.

*Type* in the Indian Museum, Calcutta.

#### GENUS PSEUDOSKUSEA. Theobald (1907).

Mono. Culicid. IV., 192 (1907).

Two species now occur in this genus and they can be told as follows :—

Abdomen unbanded with lateral basal white spots.

1. Thorax deep brown with two pale yellow patches, extending more or less across mesonotum; unguis equal and uniserrate *multiplex*. Theobald.
2. Thorax deep brown, a pale band in front near the head; unguis equal and simple ..... *similis*. n. sp.

Both species come from Queensland and one (*multiplex*) also from New Guinea.

#### PSEUDOSKUSEA MULTIPLEX. Theobald (1903).

*Skusea multiplex*. Theobald (1903).

Mono. Culicid. III., 293 (1903); IV., 192 (1907), Theobald; Ann. Queensland Museum, No. 8, 23 (1908), Bancroft.

Queensland; New Guinea.

*Notes.*—Dr. Bancroft writes :—" This insect is never plentiful but has a wide range in South Queensland; it is a biting mosquito and at first sight mistaken for *Culex annulirostris*, but on closer inspection the yellowish band on the thorax is noticed and the unbanded proboscis; under the microscope it is seen not to be a *Culex*. I secured ♂'s from breeding out a mixed lot of

larvae obtained from a cask placed in a small scrub on Deception Bay."

*Type* in the British Museum.

PSEUDOSKUSEA SIMILIS. nov. sp.

Head black with a pale median line and a pale lateral spot and paler around the eyes; palpi and proboscis black. Thorax deep brown, a pale band in front near the head; pleurae brown spotted with white. Abdomen black with basal white lateral spots which spread out upwards medianally and which look like median lateral spots from above. Legs black. Ungues equal and simple.

♀. Head clothed with flat black scales, paler ones in the middle in some lights forming a median line, a patch of flat creamy ones on each side and paler hues around the eyes in certain lights; chaetae black; palpi short, rather thick, black; proboscis black; clypeus black.

Thorax black, clothed with small narrow-curved, almost hair-like scales of a dull brown hue, except in front, where they form a pale dull golden area against the head and a few of similar



Fig. 69.  
Wing of *Pseudoskusea similis*. ♀. nov. sp.

colour over the wings and before the scutellum; scutellum dark with dull golden and brown narrow-curved scales; black posterior border-bristles, apparently four to the mid lobe; metanotum black; pleurae deep brown with patches of flat dull white scales.

Abdomen black, showing median lateral white spots above, which arise from more lateral basal white spots; these are most prominent on the apical segments than on the basal ones.

Legs black, unbanded, paler at base and on the venter of the femora, traces of pale scales in certain lights at apices of

femora and tibiae, but not definite spots; unguis all equal and simple.

Wings rather short and broad: the sub-costal cell large; first fork-cell longer and narrower than the second, its base scarcely nearer the base of the wing, its stem about two-thirds the length of the cell; stem of the second fork-cell longer than the cell; posterior cross-vein the same length as the mid, not quite its own length distant from it. (Fig. 69.)

*Length.*—4·5 mm.

*Habitat.*—Kuranda, Queensland (Dr. Bancroft).

*Observations.*—Described from a single ♀. It comes very near *Pseudoskusea multiplex*, Theobald, from Queensland, but differs as follows: the ♀ unguis are not uniserrate and the pale dull golden area or band near the head on the thorax is not so distinct.

*Type* in the British Museum.

#### GENUS LUDLOWIA. Theobald (1907).

Mono. Culicid. IV., 193 (1907).

Three species are now described in this genus, and I fancy I have one more from the Sudan.

Three species have been described:—

Abdomen unbanded.

Very large basal lateral light spots forming

an almost continuous lateral stripe ♂ ..... *chamberlainii*. Ludlow.

Abdomen banded.

Last three hind tarsals pale yellow ..... *sudanensis*. Theobald.

Last three hind tarsals brown ..... *minima*. Ludlow.

#### LUDLOWIA CHAMBERLAINII. Ludlow (1904).

*Mimomyia* (?) *chamberlainii*. Ludlow (1904).

*Mimomyia chamberlain*. Banks (error) (1906).

Canad. Entomo. XXXIV., 297 (1904). Ludlow; Philip. Journ. Sci. I., 9, 991 (1906), Banks; Mono. Culicid. IV., 194 (1907), Theobald; Mosq. Philip. Isl., 10 (1908), Ludlow.

Philippine Islands.

*LUDLOWIA SUDANENSIS.* Theobald (1905).

First Report Gord. Coll., Well. Labs., 83 (1905); Mono. Culicid. IV., 194 (1907), Theobald.

Bahr-el-Jebel, North Sudd Country, Sudan.

*Type* in the British Museum.

*LUDLOWIA MINIMA.* Ludlow (1907).

Canad. Entomo. XXXIX., p. 413, Dec. (1907); Mosq. Philip. Isl., 10 (1908), Ludlow.

" Head light brown, covered with flat light yellow or yellowish-white scales, two brown bristles projecting forward between the eyes, a few brown fork scales on the nape; antennae brown, verticels and pubescence brown and normal; basal joint testaceous, with a few short brown hairs, second and third joints have a few flat brown scales; palpi brown, apical joints missing, those remaining heavily brown-scaled; proboscis brown, tip light, eyes brown, clypeus brown, with frosty tomentum.

Thorax: prothoracic lobes testaceous, with a few brown bristles; mesonotum dark brown, partly denuded, but the remaining scales on each insect are dark brown, slender curved scales (not hairs) and a few dark brown bristles over the scutellum and wing joint; scutellum with dark brown slender curved scales and brown bristles; pleura light, with a couple of brown spots and a few white scales; metanotum dark brown.

Abdomen light with dark brown scales and narrow ochraceous basal bands extending laterally as small basal light spots; venter mostly light-scaled.

Legs as a whole brown, but the colour changing with the direction of the light to a light brownish-grey; coxae and trochanters light; femora dark dorsally, ventrally almost white, tiny apical light spots on femora and tibiae, distally dark, the rest of joints missing except on hind legs, where the unguis are simple and equal.

Wings clear, densely covered with brown scales, lateral scales broadly lanceolate, median broadly truncate, showing very little if any symmetry; spine-like scales on the costa. Cells not so markedly short as in *Chamberlainii*. First sub-marginal about 1 to 7 long, and nearly the same width as second posterior, both very narrow; stem of former not half as long as cell, and about a fourth shorter than that of second posterior; mid cross-

vein meets supernumerary, and is slightly longer; posterior cross-vein slightly shorter than mid and twice its own length distant.

*Length.*—2·5 mm.

♂. Is very like female, fork scales on nape more numerous; antennae missing; palpi longer than proboscis and clubbed; unguis on fore and mid legs unequal, the larger uniserrate, the smaller simple and comparatively straight, hind legs missing. Wing-cells shorter in proportion and the stems longer.

*Length.*—3 mm.

*Habitat.*—Cudarangan, Mindana, Philippine Islands.

*Time of capture.*—January 19, 1906.

Neither specimen is perfect, and the male especially is in bad shape, but there can be no reasonable doubt as to the genus or that the species is new.

Described from one male and one female sent by Lieut. W. H. Duncan, Assistant Surgeon U.S. Army, with specimens of *Chamberlainii*; it is an extremely small mosquito, quite as small as *S. minuta*, Theob., or *S. amesi*, Ludlow."

#### GENUS **RADIOCULEX**. Theobald (1908).

Rec. Ind. Mus. II., pt. iii., No. 30, 295 (1908).

Head clothed with small flat scales and a group of upright forked ones behind. Palpi of female thin, longer than in culex, of the male long, longer than the proboscis composed of two segments, the apical one short and clavate, with thorn-like chaetae; proboscis curved and swollen apically, shorter than the body; antennae of female pilose, of male densely plumose.

Thorax and scutellum with narrow-curved scales, metanotum nude; blunt curved chaetae project over the head. Male genitalia with normal narrow claspers.

Fork-cells small; the marginal cell of peculiar form in both sexes swollen out in the middle, contracted near apex of wing and widening again at the apex; scales large, median vein scales single, small and spatulate.

A very distinct genus with shiny integument, especially on the thorax and easily told by the curious marginal cell and male palpi.

RADIOCULEX CLAVIPALPUS. Theobald (1908).

Rec. Ind. Mus. II., pt. iii., No. 30, 295 (1908).

Head brown and grey, proboscis deep brown, curved, unbandied. Thorax deep shiny brown, yellow at the sides, pleurae pallid. Abdomen deep violet, the segments paler at their bases but not banded, pale lateral basal spots. Legs deep brown with narrow pale bands involving both sides of the joints, last hind tarsal pale. Male antennae with flaxen plume-hairs; palpi a little longer than proboscis, the apical segment large and swollen, but short.

♀. Head clothed with small flat scales all over, of a pale ochreous-grey, with brown and violet patches seen in certain lights, a large area of black upright forked scales in the middle behind, with a distinct median division; palpi rather long and thin, clothed with brown scales and some violet ones and a few white ones at the apex; the pale testaceous ground colour shows through here and there; clypeus shiny, deep brown, traces of a lateral process on each side; antennae brown; testaceous at the base, hairs dark, proboscis deep brown, curved, not as long as the body.

Thorax black and shiny in the middle, yellow at the sides, the junction of the two colours being abrupt, the median dark area has narrow-curved bronzy scales, the yellow areas shiny narrow-curved golden scales, in front projecting over the head are tufts of black, blunt, thick, curved bristles of various length; over the roots of the wings and in front of them long golden chaetae darkening at their apices; there are also a few pale creamy scales forming a more or less pronounced spot in front of the bare space in front of the scutellum and an obscure line of the same on each side of it; scutellum blackish with narrow-curved bronzy scales and deep brown border-bristles; metanotum blackish-brown, nude, pleurae pale ochreous.

Abdomen unbanded, clothed with small flat scales showing brown and violet colours, with pale golden border-bristles giving a general false appearance of basal pale bands when examined with a lens; laterally the abdomen shows testaceous hues and there are pale scaled lateral marks running right down the segments; venter ochraceous to testaceous with pallid scales.

Legs with the coxae, the base and under side of femora pallid; rest dark brown; hind femora yellow at the apex; with five prominent chaetae along one side and smaller ones on the apex,

etc.; a narrow pale band at the junction of the metatarsal and first tarsal segments, also first and second tarsals on the fore and mid legs, other segments dark brown; on the hind legs the banding is more pronounced and extends to all the joints, the last segment being almost white below; unguis all equal and simple.

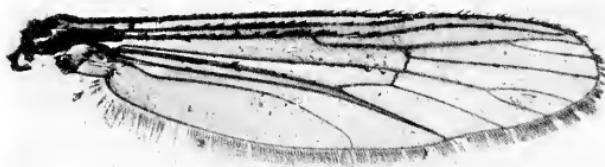


Fig. 70.  
Wing of *Radioculex clavipalpus*. ♀. Theobald.

Wings with short fork-cells about the same length, but the sub-marginal narrower than the second posterior cell, its base a

little nearer the apex of the wing, its stem about one and a third times its length, stem of the second posterior cell a little longer than the cell; marginal cell swollen in the middle, narrowed apically and again expanded at the wing apex; posterior cross-vein slightly longer than the mid, not quite its own length distant from it; outer costal border spinose; median vein-scales single, small and spatulate; scales dense on sub-costal and first long vein; lateral vein scales on the apical areas of the second, third and fourth veins broad and flat.



Fig. 71.

*Radioculex clavipalpus*. ♂. Theobald. Head.

Length.—3·5 to 4 mm.  
♂. Head, thorax, abdomen and legs as in the female. Antennae with dense flaxen

plume-hairs, almost golden at their base, flagellum banded; apical segments long, deep brown; proboscis bright ochreous, purple-brown at the apex, which is

hairy ; palpi longer than the proboscis, straight, of two segments, the apical one short and swollen, ochreous with ochreous scales and some violet ones, especially above and at the apices of the two segments, the last segment with dark stiff thorn-like chaetae, becoming small towards the apex. Ungues of the fore and mid legs unequal, the fore with a small tooth at the base of the smaller one, a large tooth in the middle of the larger claw and a small spine-like tooth at its base, mid claws with two teeth on the larger claw, none on the smaller ; hind claws equal and simple.

Wings with small fork-cells like the female ; the first submarginal only about half the width of the second posterior cell, its stem about one and a third times its length ; stem of the second posterior also about one and a third times the length of the cell ; the first long vein markedly bent in the middle and approaching the upper branch of the second, thus forming a very curious marginal cell, the posterior cross-vein is only half its own length distant from the mid.

*Length*.—3·5 to 4 mm.

*Habitat*.—Calcutta ; Berhampur, Murshidabad district, Bengal, 1. i. 08 (R. Lloyd) ; Rangoon, Burma, 25. ii. 08 (N. A.) ; Yaikam, Travancore, Coastal region, 5. xi. 08 (Annandale) ; Katihar, Purneah district, N. Bengal, 4, 5. x. 08 (C. A. Paiva).

*Time of capture*.—November and December in Calcutta, and one in July ; January at Berhampur.

*Observations*.—Described from a long series, some taken at light.

The specimens show some variation in size and colour, but the marked black shiny thorax with the clear cut yellow area on each side and the quaint marginal cell will at once identify it.

*Types* in the Indian Museum, Calcutta, and co-types in the British Museum.

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GENUS **CHAETOCRUIOMYIA**. nov. gen.

(“The Thorny-legged Mosquito.”)

Head clothed with dense flat scales all over. Palpi of ♀ rather less than one-fourth the length of the proboscis ; proboscis rather short and thick. Thorax clothed with narrow-curved scales ; scutellum with scanty scales, flat ones at the base of the mid lobe, narrow-curved at border and also a few of the latter on the lateral lobes. Abdomen expanded ventrally at apex. Legs very spiny, especially the tibiae which have a series

of very long spines. Wings short and broad, dense broad scales at the base, thin straight linear ones over apical area. Veins thick; sub-costal cell swollen towards base. A very marked new genus easily told by the many thorn-like chaetae on the legs.

**CHAETOCRUIOMYIA SYLVESTRIS. nov. sp.**

Head shiny creamy-white, darker at the sides; proboscis, palpi and antennae black. Thorax with shiny creamy-white

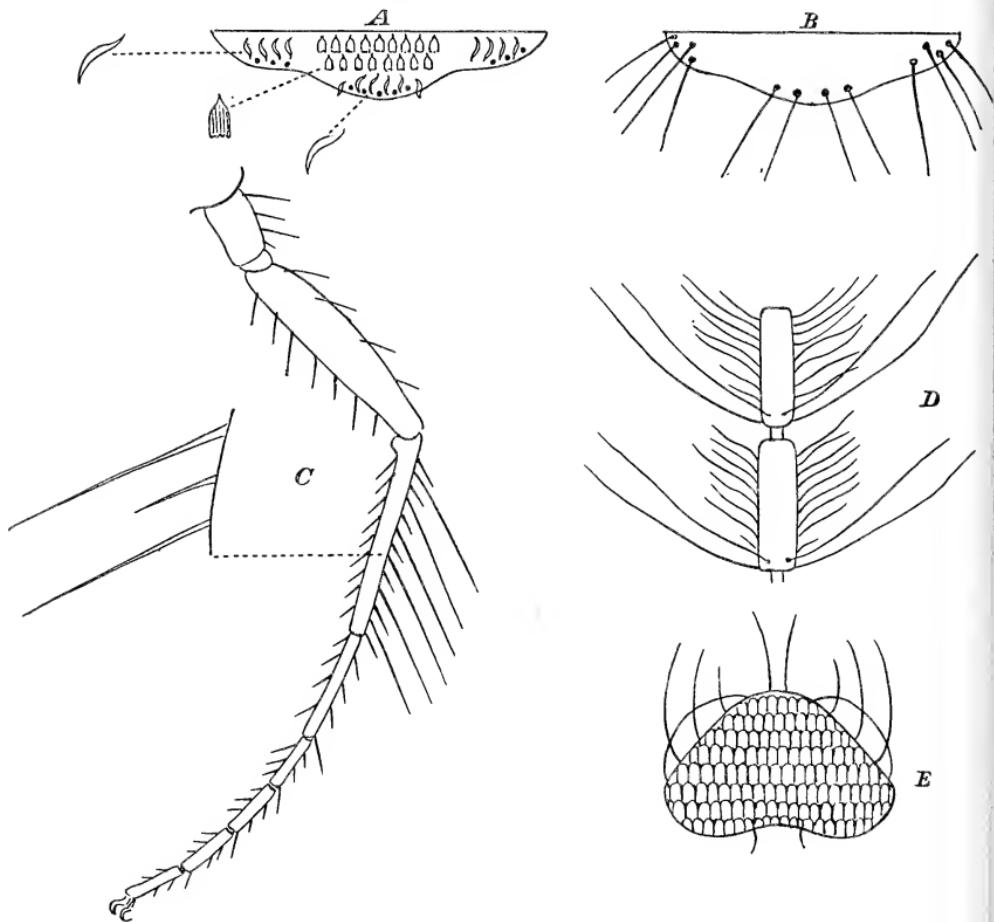


Fig. 72.

*Chaetocruiomysia sylvestris. n. sp.*

*A* and *B*, scutellum; *C*, legs; *D*, segments of antennae; *E*, head.  
(Variation in the scutellar chaetotaxy of the two ♀'s.)

scales on the front half, brown on the posterior half with many long golden chaetae; scutellum dull, almost hidden by the long golden chaetae; pleurae brown with dense patches of silvery-

white scales. Abdomen black with narrow basal creamy bands and with prominent snowy-white lateral spots, venter black at apex, then snowy-white, then creamy-yellow. Legs dark brown, ochreous at the base with basal white bands; very spiny, especially long spines on the tibiae. Wings with a white spot at base.

♀. Head clothed with flat creamy-white shiny scales which appear darker at the sides, but in certain lights all can be seen the same colour, two brown chaetae project between the eyes and some longer black ones at the sides; palpi short black, with some long black chaetae; proboscis black, rather short and thick; clypeus black, shiny, a blunt process on each side towards



Fig. 73.  
*Chaetocruiomia sylvestris*. ♀. n. sp.  
Proboscis and palpi of ♀.

the base; antennae black, basal segment rather paler, verticillate hairs black, pubescence long and dark.

Thorax densely clothed on the anterior half with shiny, creamy-white scales of two sizes, and forming a linear arrangement in the middle, ground colour deep ochreous; posterior half dark brown with very small scanty narrow-curved scales of brown or dull hue with golden reflections, the whole surface with numerous long chaetae projecting backwards, bright golden in some lights, brown and golden in others; scutellum ochreous-brown, with dull coloured flat scales at the back of the mid lobe, and a few dull narrow-curved ones on the apical region, a bare space on each side, and some dull narrow-curved scales on the lateral lobes; four long chaetae on posterior border of mid lobe, with black bases, others on the lateral lobes, and some short golden hairs; metanotum dark brown; pleurae brown with dense patches of flat creamy-white scales.

Abdomen black with basal median creamy-white patches, on

some segments forming almost bands and with pure white large lateral spots, basal segment ochreous with two black patches of scales; venter much expanded apically in a downward direction, black scaled, the penultimate segment with a basal creamy band, third segment with creamy and dark scales, rest mostly ochreous; border-bristles pallid.

Legs—coxae, trochanters and base of femora pale ochreous with some shiny scales; fore femora brown with a long area of pale scales ending in a creamy apical spot; fore tibia dark, a few pale apical scales with short dark thorn-like chaetae and a row of long brown chaetae (6?); base of metatarsi and first tarsal creamy-white; mid legs, femora black, no white apical spot; tibiae with a long line of yellow scales going nearly the whole length of the segment; metatarsal and tarsal bands more pronounced; hind femora snowy-white at apex; tibiae with a shorter yellow scaled area towards the apex, small tibial spines black with three very long golden ones and one darker and rather shorter, base of metatarsus and first tarsal broadly white banded; all the segments on all the legs spiny including the coxae. Ungues equal and simple.

Wings short and broad with thick broad scales at the base, thin straight linear ones on the apical half; the longitudinal



Fig. 74.  
*Chaetocruiomyia sylvestris*. ♀. n. sp.

veins very thick; the distance between the costal and sub-costal and the latter and the first long vein markedly wide; marginal cell markedly swollen towards the base; first fork cell longer and slightly narrower than the second, its base nearer the base of the wing, its stem less than one-third the length of the cell; stem of the second fork-cell about two-thirds the length of the cell; posterior cross-vein about its own length distant from the mid.

*Length.*—3 to 3·5 mm.

*Habitat*.—Kuranda, Queensland (Dr. Bancroft).

*Observations*.—Described from two ♀'s taken by Dr. Bancroft, who sends the following note, "I tried hard to get more, but only these two cared to bite me, although I sat for hours on many occasions in very likely spots in the jungle. In the Kuranda district there are extensive jungles or scrubs as they are called in Australia." It is a very marked compact species with short spiny legs and marked thoracic adornment, somewhat like a *Leucomyia*, but the curious wing venation and the short thick legs and proboscis as well as the marked leg ornamentation will at once enable anyone to identify it. It certainly comes in a well marked new genus.

Type in the British Museum.

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### GENUS SCUTOMYIA. Theobald (1904).

Entomologist, 77 (1904); Mono. Culicid. IV., 196 (1907), Theobald.

Five species so far have been described in this genus. They tabulate as below :—

- A. Legs basally banded with white.
  - α. Proboscis prominently white banded.
    - Last hind tarsal all white.
    - Thorax with median silver line, two lateral curved lines and two short yellow lateral ones..... *notoscripta*. Skuse.
  - αβ. Proboscis with trace of banding.
    - Thorax with 4 silvery spots..... *sugens*. Wiedemann.
- AA. Legs apically banded.
  - Proboscis unbanded.
    - Thorax with 4 silvery spots..... *marshallii*. Theobald.
- AAA. Fore and mid legs unbanded; hind with basal white dorsal patches.
  - Thorax with broad median silvery line in front ..... *albolineata*. Theobald.
- AAAA. Legs unbanded.
  - Thorax with front two-thirds white with 3 black lines ..... *nivea*. Ludlow.

**SCUTOMYIA NOTOSCRIPTA.** Skuse (1889).

*Culex notoscripta.* Skuse (1889).

*Stegomyia notoscripta.* Skuse—Theobald (1901).

Proc. Linn. Soc. N.S. Wales, III., 1738 (1809), Skuse; Mono. Culicid. I., 286 (1901); III., 145 (1903) and IV., 198 (1907), Theobald; Ann. Queensland Mus., No. 8, 24 (1908), Bancroft.

Sydney, New South Wales; Queensland; New Guinea; India (?).\*

*Notes.*—Bancroft writes that, “This elegant insect is very common throughout the year all over S. Queensland, New South Wales and Victoria. It can be told at a glance from *Stegomyia fasciata*, the ‘Tiger Mosquito,’ by its dark colour and banded proboscis, and from *Culex vigilax* by the silvery line of scales on the scutellum (? mesonotum), and the banded proboscis, and also from the curious habit of continuously lifting up and down the hindermost pair of legs; it oviposits singly in small collections of water in crevices and hollows of trees both in scrub and forest, in flower-pot saucers in the fernery, in water jugs in the house, in jam tins and bottles in the rubbish heap; the eggs are oval, black with a silvery mesh-work pattern; it lives for months in confinement, but refuses to oviposit, or only on rare occasions; the eggs are laid at the edge of the receptacle at the water line; it is a biting mosquito, but never becomes so numerous as to cause annoyance in Queensland. Skuse discovered this species in Sydney, and said it caused a painful wound; here its bite is scarcely felt.”

**SCUTOMYIA NOTOSCRIPTA.** Skuse.

Sub. sp. *samarensis.* Ludlow (1903).

Journ. New York Ent. Soc. XI., 138 (1903), Ludlow; Gen. Ins. Culicid., 19 (1905), Theobald; Journ. Phil. Sci. I., 9, 985 (1906), Banks.

*Habitat.*—Philippine Islands (Ludlow); Kuranda, Queensland (Dr. Bancroft).

\* Giles records this from India, but I have not seen any specimen that can be placed near it from there, and doubt its existence in India.

*SCUTOMYIA SUGENS.* Wiedemann (1828).

*Stegomyia sugens.* Theobald (1901).

*Culex sugens.* Wiedemann (1828).

*Culex vittatus.* Bigot (1861).

Auss. Zweiflüg. Ins. I., 545, 4 (1828), Wiedemann; Mono. Culicid. I., 300 (1901); IV., 199 (1907), Theobald; Journ. Bomb. Nat. Hist. Soc. XIV., 684 (1905), Patton; Third Report Gord. Coll., Well. Labs., 255 (1908), Theobald.

Corsica; Nubia; Aden; India; Mashonaland; Transvaal; Uganda; Sierra Leone; Gambia.

*Additional localities.*—Ceylon (E. E. Green); Aden Hinterland, near Ulub, Nobat, Sheik Othaman, and at Aden (Patton); Katemas, Bihé, Angola, West Africa (Dr. Creighton Wellman), 18. ii. 1905; hills E. of Erkowit, Sudan (H. King).

*Observations.*—Patton states that the Aden Hinterland

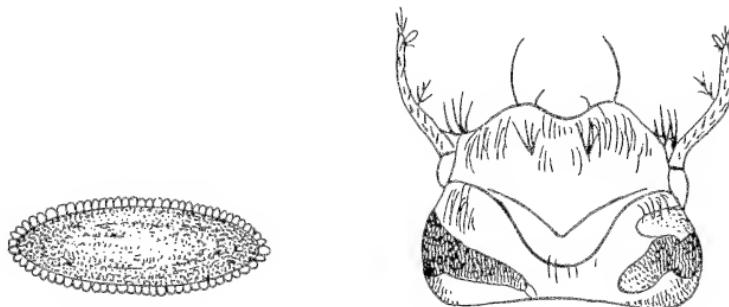


Fig. 75.

Ovum and larval head of *Stegomyia sugens*. Wied. (after Patton).

specimens vary a little from the type, and that after he had examined "hundreds of specimens, it was found that there were always three large white spots on the thorax with a few smaller ones between. The scutellum has three white spots on each lobe."

Patton found it in a tank near Ulub, breeding with *C. fatigans*, also in barrels of water at Nobat. In Sheik Othaman and Aden he says it is a great pest, and that it breeds in the wells and wherever water is stored in barrels, buckets, etc.

An attempt was made to try and exterminate this pest at Aden, and what was at first thought to be a simple matter turned out to be most difficult. The eggs are capable of hatching after sinking, and it was thus not easy to be sure when emptying a barrel of removing all the eggs. The only sure method was

constantly oiling the water; which destroyed the larvae when they hatched. The bite of this mosquito is most irritating, a large lump being raised in a short time where the mosquito inserted its proboscis. The male of this species accompanies the female and will alight on one's body but never bites. This mosquito is troublesome in the morning and at mid-day.

The *larva* is described by Patton as follows:—Head small and black with long curved antennae. The syphon tube is short.

The *egg* is the same as that of *S. fasciata*, described by Daniels.

The larvae are exceedingly active and are able to remain a long time below the surface. It was never found by Patton breeding in running water.

*The male genitalia.*—Patton gives a rough sketch of the male genitalia reproduced here and describes them as follows:—

“ Male genitalia are exceedingly characteristic and as far as I know have not been described.

“ The basal segment is long and covered with dark hairs, on its inner surface there is a knob-like projection covered with minute hairs.

“ The apical segment is thin and terminates in a flattened boss. From its outer and upper end there projects a long curved hair-like process, which has a blunt termination.”

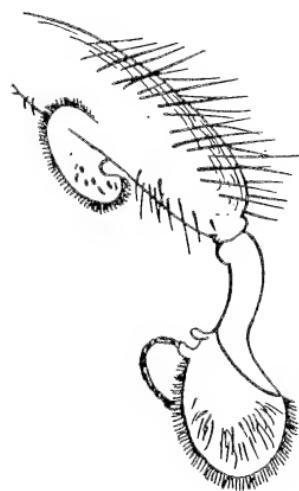


Fig. 76.

*Stegomyia sugens*. Wied.  
♂ clasper (after Patton).

#### *SCUTOMYIA MARSHALLII.* Theobald (1901).

*Stegomyia marshallii.* Theobald (1901).

Mono. Culicid. I., 310 (1901).

Salisbury, Mashonaland.

*Type* in the British Museum.

#### *SCUTOMYIA ALBOLINEATA.* Theobald (1904).

Entomologist, XXXVII., 77 (1904); Mono. Culicid. IV., 197 (1907),  
Theobald.

Kuala Lumpur, Federated Malay States.

*Type* in the British Museum.

**SCUTOMYIA NIVEA.** Ludlow (1903).

*Stegomyia nivea.* Ludlow (1903).

New York Ent. Soc. II., 139 (1903), Ludlow; Mono. Culicid. III., 139 (1903), Ludlow in Theobald; Canad. Ent. XXXVII., 134 (1905), Ludlow; Gen. Ins. Culicid., 19 (1905), Theobald; Phil. Journ. Sci. I., 9, 985 (1906), Banks; Mosq. Philip. Isl., 10 (1908), Ludlow.

Oras, Samar, Philippine Islands and Federated Malay States.

*Note.*—Banks makes the following remark *re* this species:—  
“There seems to be a confusion of this species with *Stegomyia amesii*, Ludlow, in ‘Genera Insectorum.’”

Both are given as distinct. Banks omits its locality in his list (Oras, Samar, P. I.), and also that it was described by Miss Ludlow in Vol. III. of this Monograph.

*Type* presented to British Museum by Miss Ludlow.

### GENUS **AEDIMORPHUS.** Theobald (1903).

Mono. Culicid. II., 290 (1901); III., 290 (1903), Theobald.

Four species are now described in this genus, which all occur in Africa.

They tabulate as follows:—

- A. Abdomen banded, white bands basal.  
 Thorax unadorned; scutellum black and creamy.  
 Legs unbanded; hind tibiae with white apical spot..... *albotaeniatus*. n. sp.
- AA. Abdomen unbanded.
  - a. Legs apically banded; last hind tarsal all white.  
 Thorax brown, white spot on each side; scutellum white ..... *alboannulatus*. Theobald.
  - aa. Legs unbanded.
    - β. Apex of femora and tibiae white.  
 Thorax 6 white spots, scutellum white ..... *punctithorax*. n. sp.
    - ββ. Two apical femoral spots and apex of tibiae white.  
 Thorax red-brown, two white areas in front and one in front of each wing..... *domesticus*. Theobald.

*AEDIMORPHUS ALBOTAENIATUS. nov. sp.*

Thorax deep rich brown with golden scales ; head pale in the middle, then dark at the sides, and then pale. Palpi and proboscis black, unbanded. Abdomen black with basal white bands. Legs black, unbanded ; hind tibiae with prominent white apical spots ; femora pale beneath.

♀. Head dark with a median basal patch of pale narrow-curved scales behind, flat white ones at their sides, flat black ones in front and at the sides of the flat white ones, then a lateral patch of flat creamy scales ; a narrow border of smaller scales around the eyes of a golden-yellow ; black upright forked scales, and deep brown chaetae in front ; palpi short, deep black, also proboscis ; antennae black, basal segment and base of second testaceous, the former with some small dark scales and darkened on one side.

Thorax deep rich brown with bronzy scales and scattered bright golden ones ; chaetae deep brown ; scutellum pale with small, flat, mixed black and creamy scales ; metanotum deep brown ; pleurae bright brown with patches of flat dull grey scales.

Abdomen black with dull violet reflections, and with basal white bands to the segments ; pale brown border-bristles ; venter with basal pale bands.

Legs black, femora pale below ; apex of mid and hind tibiae with creamy-white spots, most prominent on hind legs ; tibiae spiny, especially on hind legs, spines golden-yellow ; fore and mid unges equal and uniserrate, hind equal and simple.

Wings with brown scales ; first fork-cell a little longer and narrower than the second fork-cell, its base a very little nearer

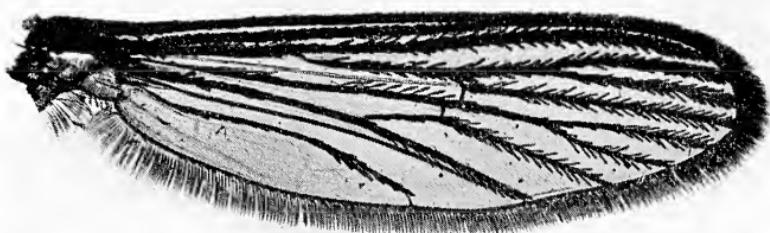


Fig. 77.  
Wing of *Aedimorphus albotaeniatus*. ♀. nov. sp.

the base of the wing, its stem about half the length of the cell ; stem of the second posterior cell more than two-thirds the length

of the cell ; posterior cross-vein about the same length as the mid, and about its own length distant from it.

♂. Thorax and abdomen as in the ♀. Palpi brown, rather shorter than the proboscis, a pale, narrow band towards the base, deep brown hair-tufts on the last two segments and on one side of the apex of the ante-penultimate, penultimate segment about one and a half times the length of the apical. Plume-hairs of antennae rich brown, the apical unplumed segments long. Fore unguis unequal, uniserrate ; mid unequal but simple ; hind small, equal, and simple.

Fork-cells short ; the first longer and narrower than the second, its stem nearly as long as the cell ; stem of the second also nearly as long as the cell.

*Length.*—3·3 mm.

*Habitat.*—Accra (Dr. Graham).

*Time of capture.*—19 and 23. vi. 08.

*Observations.*—Described from a ♂ and ♀ caught in latrines at 7 A.M.

A markedly banded abdomen species, thick-set and dark. Resembles, at first, a *Culiseta*, and is of the general build of *C. taeniorhynchus*.

*Type* in the British Museum.

#### AEDIMORPHUS ALBOANNULATUS. Theobald (1905).

Entomologist, XXXVIII., 154 (1905) ; Mono. Culicid. IV., 199 (1907),  
Theobald.

Sierra Leone.

*Type* in the British Museum.

#### AEDIMORPHUS PUNCTITHORAX. nov. sp.

Head brown in the middle, black at the sides ; proboscis and palpi unbanded. Thorax rich brown with six silvery-white spots ; scutellum silvery-white. Abdomen dark brown with basal, pale, lateral spots. Legs unbanded, apices of tibiae and femora silvery-white.

♀. Head dark, clothed with flat black scales in front, and at the sides with some dull ochreous ones, and white ones at the sides, a patch of narrow-curved dull ochreous ones at the back, and black upright forked scales ; proboscis and palpi black ; antennae dark brown, basal segment bright brown with a few small flat scales.

Thorax dark rich brown with very small dull golden narrow-curved scales, and six spots of small, flat, silvery-white scales; chaetae dark brown; scutellum clothed with flat, silvery-white scales; metanotum dark brown; pleurae bright brown with pale puncta.

Abdomen black with basal lateral snowy-white spots and golden border-bristles; venter mostly dark.

Legs dark brown, venter of femora for the basal two-thirds pale creamy; a snow-white spot at the apex of the femora and tibiae; chaetae golden; fore and mid unguis equal, uniserrate.

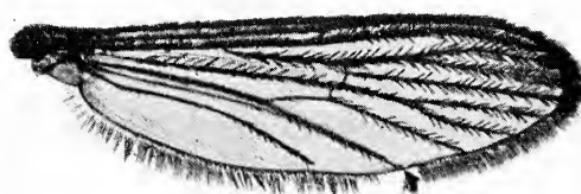


Fig. 78.  
Wing of *Aedimorphus punctithorax*. ♀. nov. sp.

Wings with the first fork-cell a little longer and narrower than the second fork-cell, its stem about half the length of the cell, its base nearly level with that of the latter; stem of the

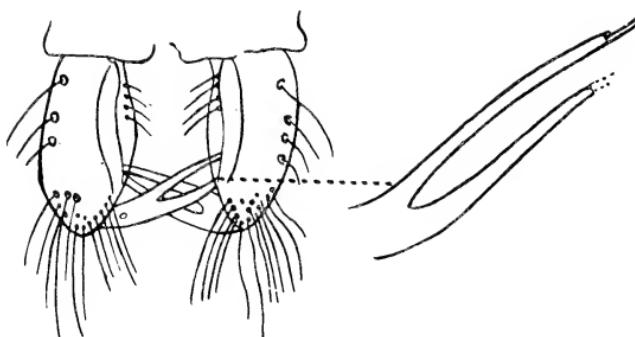


Fig. 79.  
Male genitalia of *Aedimorphus punctithorax*. nov. sp.

second fork-cell about two-thirds the length of the cell; posterior cross-vein not quite its own length distant from the mid.

*Length*.—2·3 mm.

♂. Palpi dark brown, hair-tufts dark on the last two segments, the penultimate rather swollen and a little longer than the apical one; antennae plumose, plume hairs brown. Fore

ungues unequal, the larger with a large tooth, the smaller with a small one near the base; mid very unequal, simple; hind equal and simple.

Wings with the fork-cells shorter than in ♀, of nearly equal length; their stems nearly as long as the cells, posterior cross-vein about its own length distant from the mid.

The male claspers are very marked, being bifid.

*Length*.—2·3 mm.

*Habitat*.—Accra (Dr. Graham).

*Time of capture*.—11, 12, 16, 18, 20. vi. 08.

*Observations*.—Caught in latrines at 8 A.M. Described from two perfect ♀'s and two ♂'s. A very distinct small species with marked thoracic spotting. Very numerous in June. Three ♀'s taken in same locality, 12 and 18. vi. 08, show only the two anterior silvery thoracic spots.

*Type* in the British Museum.

— *AEDIMORPHUS DOMESTICUS*. Theobald (1901).

*Uranotaenia domestica*. Theobald (1901).

Mono. Culicid. II., 253 (1901); III., 291 (1903), Theobald.

Old Calabar.

*Additional locality*.—Accra (Dr. Graham). A numerous species and caught in latrines and in bush paths, April and October.

*Type* in the British Museum.

### GENUS **RACHISOURA**. nov. gen.

Palpi short in the ♀; nearly two-thirds the length of the proboscis in the ♂, acuminate, thin, no hair tufts. Head clothed with flat scales, a few narrow-curved ones on the nape; clypeus round, much constricted from head; antennae with long verticillate hairs in both sexes, ♂ most dense. Thorax with large narrow-curved scales; scutellum with flat scales. Abdomen with the apex very bristly. Wings with rather short fork-cells, scales broad and dense.

This genus can at once be told by the markedly bristly apex, and by the marked palpi of the male.

## RACHISOURA SYLVESTRIS. nov. sp.

Head, palpi and proboscis black. Thorax dusky brown; pleurae white scaled. Abdomen black, with apical lateral triangular creamy spots; venter creamy. Apex bristly. Legs uniformly black, except the coxae and trochanters, which are yellow. Wings with dark brown dense scales.

♀. Head clothed with flat blackish-brown scales, except for a small dull grey patch of narrow-curved and upright forked scales on the middle of the nape; two golden chaetae project between the eyes, and four black ones on each side over the eyes;

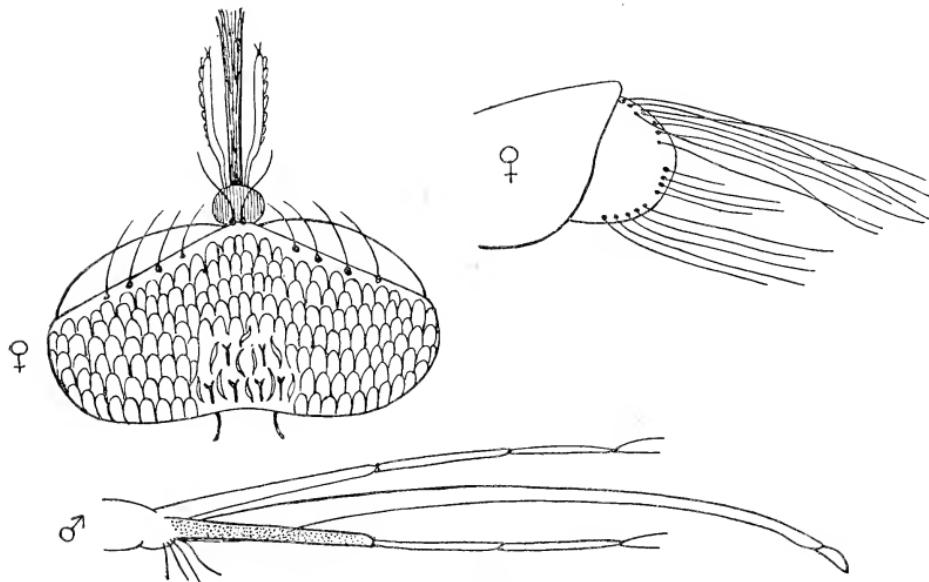


Fig. 80.

*Rachisoura sylvestris. n. sp.*

Head of ♀ and apex of ♀ abdomen and ♂ palpi and proboscis.

clypeus round with a median sulcus, black, very much projecting from head; palpi thin black, with a few black chaetae; proboscis black; antennae black, with long black verticillate hairs and short black pubescence; eyes silvery.

Thorax black, clothed with dense irregular broad curved scales of a dusky hue; scutellum ochreous, clothed with dusky flat scales and deep brown border-bristles; four to the mid lobe and five spread out fan-shape on the lateral lobes and smaller dark hairs. The scutellar scales show pale reflections in some lights. Metanotum ochreous brown, with traces of two very thin dark lines; pleurae ochreous, densely clothed with flat

creamy-white scales and a few black and pale chaetae; prothoracic lobes prominent, clothed with flat creamy scales and a few dusky ones; there are also flat scales over the lobes, the lowest dark, the highest pale.

Abdomen entirely jet black, with violet reflections, the segments with apical creamy lateral triangular spots, the base of the triangles posterior; venter creamy; border-bristles pale, apex with long black dense chaetae.

Legs black, unbanded; coxae and trochanters ochreous, with pale flat scales; some white scales also just at the base of the under side of femora; spines black; unguis equal and simple, hind pair small.

Wings with broad brown dense scales, particularly at the apex; first fork-cell longer and narrower than the second fork-cell, their bases about level; stem of the first about half the

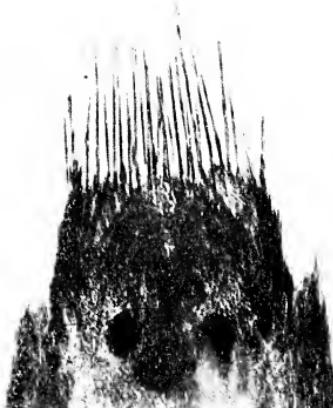


Fig. 81.  
*Rachisoura sylvestris*. ♀. n. sp.  
Apex of abdomen.



Fig. 82.  
*Rachisoura sylvestris*. ♀. n. sp.

length of the cell, of the second not quite so long as the cell; posterior cross-vein longer than the mid, about twice its own length distant from it. Halteres with pale stem and fuscous knob.

*Length*.—5 to 5·5 mm.

♂. Head, thorax and abdomen as in the ♀; palpi brown, not quite two-thirds the length of the proboscis, acuminate, thin,

no hair-tufts or hairs, but two spines at the apex; antennae more plumose than in ♀ and paler, some scales on the second segment. Fore and mid unguis unequal, the larger uniserrate, the smaller simple.

*Length.*—5·5 mm.

*Habitat.*—Kuranda, Queensland (Dr. Bancroft).

*Observations.*—Described from four ♀'s and one ♂. Dr. Bancroft says this very marked Australasian species was common at the butts of large trees, fig-trees especially. Occasionally one would bite.

It is a very marked species which must come in a new genus. The wing scales and marked palpi at once separate it.

*Types* in the British Museum.

### GENUS MIMETEOMYIA. nov. gen.

Very near *Rachisoura*, but the ♀ palpi much shorter and the lateral wing scales linear and narrowly spatulate.

Head covered with flat scales; mesonotum with large narrow-

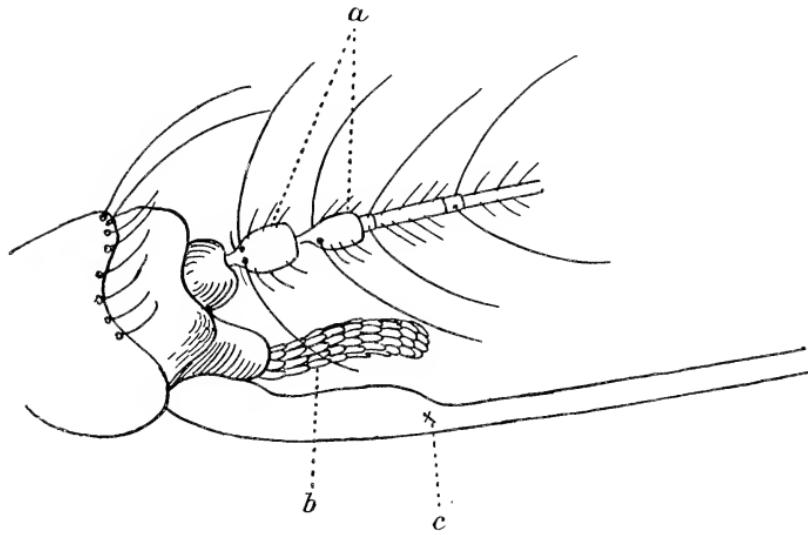


Fig. 83.  
*Mimeteomyia apicotriangulata*. ♀. n. sp.  
a, antenna; b, palp; c, proboscis.

curved scales; scutellum with small flat scales; antennae with the second and third segments large and swollen.

The wing scales very marked, a mixture of straight linear scales and rather narrow spatulate ones; costa spiny. Apex of

abdomen bristly. Compare wings of this and *Rachisoura*, to which it bears a strong superficial resemblance.

Queensland (Dr. Bancroft).

**MIMETEOMYIA APICOTRIANGULATA. nov. sp.**

Head black, pale around the eyes, also the small palpi and proboscis; palpi short, clavate. Thorax brown with dull golden scales, most prominent over wing roots. Abdomen black with apical white triangular lateral spots; apex bristly. Legs black, unbanded; under side of femora pale.

♀. Head clothed with flat black scales except at the sides

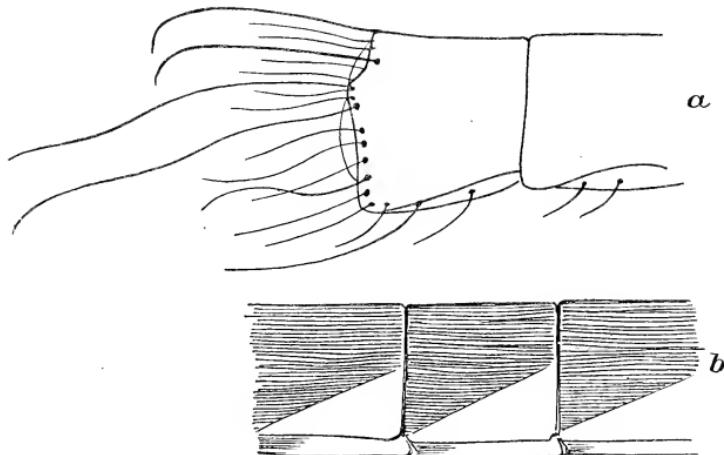


Fig. 84.

*Mimeteomyia apicotriangulata. n. sp.*  
a, apex of abdomen; b, lateral adornment.

and along a narrow border around the eyes; two pale chaetae between the eyes, black ones along the eye borders; clypeus and proboscis black; palpi very short and black; antennae blackish-brown with black verticillate hairs and silvery grey pubescence.

Thorax black, clothed with rather large bronzy-brown curved scales and similar ones of a dull ochreous hue mainly behind and at the sides; chaetae black with dull golden reflections; scutellum dark with small flat dark scales, some showing dull ochreous reflections; border-bristles deep brown; metanotum black; pleurae deep brown with patches of flat pale grey scales.

Abdomen black with apical triangular white spots, the base of the triangles apically placed; border-bristles dark with some golden reflections, apical segment bristly.

Legs black, unbanded ; white scales on the coxae, venter of femora pale, rather long black chaetae on the hind femora, other chaetae black ; unguis equal and simple.

Wings with spiny outer costal border, moderately long fork-cells, the first considerably longer and a little narrower than the second, its base a little nearer the base of the wing, its stem



Fig. 85.

Wing of *Mimeteomyia apicotriangulata*. ♀. Theobald.

about one-third the length of the cell ; stem of the second fork-cell nearly two-thirds the length of the cell ; posterior cross-vein about three times its own length distant from the mid. Lateral wing scales linear and narrowly spatulate ; fringe dense.

*Length*.—3·5 mm.

*Habitat*.—Kuranda, Queensland (Dr. Bancroft).

*Observations*.—Described from a single ♀. It looks like a small *Rachisoura sylvestris*.

*Type* in the British Museum.

#### GENUS LEICESTERIA. Theobald (1904).

Entomologist, XXXVI., 211 (1904); Mono. Culicid. IV., 201 (1907), Theobald.

Two species have been described in this genus, one from Kuala Lumpur, and the other from Assam.

1. Abdomen with apical white lateral spots only ;  
legs unbanded ..... *longipalpis*. Leicester.
2. Abdomen also with a median semicircular yellow  
patch on each segment ; legs with traces of  
narrow pale basal banding ..... *apicalis*. Theobald.

## LEICESTERIA LONGIPALPIS. Leicester (1904).

Entomologist, XXXVI., 211 (1904), Leicester; Mono. Culicid. IV., 201 (1907), Theobald.

Kuala Lumpur, Malay States.

Type in the British Museum.

## LEICESTERIA APICALIS. Theobald (1908).

Rec. Ind. Mus. II., pt. iii., No. 30, 291 (1908), Theobald.

Thorax rich brown with a creamy yellow line around the front and sides; pleurae rich brown with pale spots. Palpi and proboscis blackish, the former about half the length of the latter. Abdomen deep blackish-brown with apical yellow semi-circular dorsal patches and white lateral spots, which swell out apically. Legs brown, with traces of narrow pale basal banding.

♀. Head clothed with brownish flat scales and paler upright forked scales behind, and with creamy spindle-shaped scales placed at right angles to the others around the eyes, palpi and proboscis blackish-brown, the former very nearly half the length of the proboscis, this with dense scales at the base; antennae brown, the basal segment large with bright ochraceous scales.

Thorax shiny black, with narrow-curved bronzy and dull ochreous scales with a well-defined area of creamy-yellow scales around the front and sides; chaetae pale golden brown, especially over the roots of the wings where they are somewhat darker; scutellum testaceous with flat dusky brown and a few dull ochreous scales; metanotum nude, chestnut-brown with a grey sheen in places; pleurae brown to yellowish brown with numerous patches of small flat ochreous scales.

Abdomen dusky black, each segment with a median apical semicircular yellow patch and with a lateral snowy-white mark which expands apically; hairs and border-bristles golden; venter pale ochreous.

Legs deep brown, banded, femora pale at the base and beneath; traces of pale knee spots; fore legs with small yellowish bands at the tibio-metatarsal joint, and at the junction of the first basal and metatarsal and apex of the first tarsal; in the mid legs the bands are more confined to the base of the segments and occur on the second tarsal also in the hind legs extending to the other two segments; pale hairs on the tibiae.

Wings with rather short fork-cells; the first a little longer and narrower than the second, its base a little nearer the apex of the wing, its stem about two-thirds the length of the cell;



Fig. 86.  
Wing of *Leicesteria apicalis*. ♀. Theobald.

stem of the second posterior nearly as long as the cell; posterior cross-vein about one and a half times its own length from the mid; scales dense on the apical areas of the veins.

*Length*.—5 mm.

♂. Palpi long and thin, acuminate, no hair tufts; longer than proboscis by about the last segment, brown with three pale yellow bands, the last two involving both sides of the segments; antennae loosely plumose, plume hairs brown, segments mostly pallid except where the verticillate hairs unite and on the long apical segments; fore and mid unguis unequal, uniserrate.

*Length*.—5 mm.

*Habitat*.—Lushai Hills, Assam (E. C. Macleod), 1500 feet.

*Time of capture*.—May.

*Observations*.—Described from two ♀'s and one ♂. Two hatched from larvae, and one caught. Closely allied to *Leicesteria longipalpis*, but easily distinguished by the apical abdominal yellow marks.

*Type* in the Indian Museum, Calcutta.

*Note*.—A specimen in the British Museum labelled by Giles *Toxorhynchites rectirostris*, which does not appear to have been described, is a badly rubbed insect from the Philippine Islands which comes near *Leicesteria*, if it does not belong to that genus. Mr. F. Carter has examined this specimen and says, "Certainly not a *Toxorhynchites*, for the first fork-cell is quite as large as the second, and the proboscis is only slightly curved."

GENUS **DUTTONIA.** Newstead (1907).

Anns. Trop. Med. and Parasit. I., No. 1, 17 (1907), Newstead.

Head of female clothed principally with flat scales, with narrow-curved ones behind, and *a row bordering the upper half of the eyes*; upright forked-scales on the dorsal area. Mesothorax with small narrow-curved and minute hair-like scales; scutellum with flat scales, *the lateral lobes small, somewhat tuberculate, and furnished with eight bristles*. Palpi short. Fork-cells long, almost equal; lateral vein scales long and narrow, but broadening towards the apex of the wing. Male with the anterior tarsi sub-chelate.

This genus is closely related to *Aedimorphus* (Theobald), but differs in the presence of narrow-curved border-scales to the eyes and the character of the lateral lobes to the scutellum. The number of bristles to the small lateral lobes is also unusual, and moreover there is a complete absence of flat scales to the mesothorax.

**DUTTONIA TARSALIS.** Newstead (1907).

Anns. Trop. Med. and Parasit. I., No. 1, 18 (1907).

Head grey. Thorax rich dull orange-brown with two median pale lines. Abdomen dark brown with silvery-white basal bands; apical segment almost entirely white. Legs pale ochreous yellow, scales of tibiae and tarsi pale brown, femora faintly speckled.

" ♀. Head dark brown; median flat scales smoky brown, lower laterals forming a relatively large white patch; median narrow-curved ones yellowish-white, frontals white, marginal series to eyes pale yellow; upright forked-scales numerous, apparently all black. Antennae very dark brown, with numerous minute loose flat white scales, giving the segments a mealy appearance. Palpi pale brown with darker scales; tips with dusky white hairs. Clypeus very dark brown with minute scattered white scales like those on the antennae. Eyes yellowish-brown with two to three black spots.

Thorax as in the ♂, but with a well-marked series of white scales in front of the mesothorax.

Legs with patches of white scales on the coxae; underside of hind tibiae clothed with white scales, with a broad apical white band; the legs are also more uniformly coloured and browner than in the ♂, but the upper surface of the tibiae is speckled.

Abdomen clothed with dark brown scales with paler ones at the articulations; venter with lateral white spots; median area greyish.

*Length.*—4·5 to 5 mm.

♂. Lateral and median flat scales of the head dull white; the narrow-curved ones bordering the eyes pale yellow; napal group of narrow-curved scales pale yellow, in some lights almost white; upright forked scales in front yellow, napal ones black, lateral ones yellow. Palpi of four segments, apically furnished with long hairs, pale ochreous with dark brown scales and indications of a faint median band. Proboscis dark brown. Segments of antennae dusky white; nodes dark brown; hairs silvery-grey and pale brown.



Fig. 87.

Male palp of *Duttonia tarsalis*.  
Newstead (after Newstead).

scales intermixed; basal bands of pearly-white scales; bands 3 to 5 broader than the rest; terminal segment almost covered with pearly-white scales; venter pale ochreous with broad indefinite basal dusky-white bands.

Legs pale ochreous, speckled throughout with ochreous-brown scales; anterior tarsi with the terminal tarsi sub-chelate; base considerably dilated, concave; base with four apparently bilateral spines, apex with a short curved spine and immediately anterior to it a long plumose hair with a bulbous base; ungues sub-equal in length, the larger with a long central tooth, the smaller with a short basal tooth; mid ungues unequal, the

Abdomen very pale ochreous, with dark brown and dull ochreous

longest simple, the smaller with a central tooth; hind unguis approximately equal and simple. Genital armature with the basal segment of the claspers furnished with numerous long bristles, two of which, near the apical extremity, are narrowly lanceolate; second segment broadly dilated at the apex, with an outer curved spine-like projection; terminal claw small, slender.

Wings sparsely clothed with small brown scales; first forked vein narrower and slightly longer than the second posterior.



Fig. 88.  
*Duttonia tarsalis*. Newstead.  
♂ genitalia (after Newstead).

*Habitat*.—Kisui, Congo Free State (Newstead)."

*Observations*.—Described by Newstead from specimens taken in the thick bush at noon, October 4th, 1904.

*Type* in the collection School of Tropical Medicine, Liverpool University.

GENUS **MACLEAYA**. Theobald (1903).

Entomologist, XXXVI., 154 (1903); Mono. Culicid. IV., 203 (1907),  
Theobald; Anns. Queensland Museum, No. 8, 27 (1908), Bancroft.

A single species only described.

## MACLEAYA TREMULA. Theobald (1903).

Entomologist, XXXVI., 155 (1903).

S. Queensland.

*Notes.*—Dr. Bancroft says of this species:—"This rare and delicate mosquito, I bred from a few larvae obtained from a well and also a water cask in Deception Bay; it lives well in confinement, and will bite when encouraged; oviposits singly. The larvae are pale in colour, almost white; during one winter I kept some alive, and they appeared to give birth to young larvae (paedogenesis) on August 26th, 1903; I tried to verify this observation, but it did not occur in summer. One or two of these mosquitoes oviposited in an aquarium covered with muslin; in due course young larvae were noticed and these grew to maturity and were turning into pupae when a number of minute larvae were observed; the question was:—Were these minute larvae produced by the other larvae? If they were not, they were from eggs which had not hatched out in the first instance, and which had lain dormant about two months."

Type in the British Museum.

GENUS **GYMNOMETOPA**. Coquillett (1906).

Proc. Ent. Soc. Wash., VII., No. 4, 183 (1906), Coquillett; Mono.  
Culicid. IV., 209 (1907), Theobald.

I have not re-examined the type of this genus (*sexlineata*) and so leave it where Coquillett places it.

I know of no new additions since Vol. IV., and the species tabulate as follows:—

1. Upper side of thorax brown scaled and with 6 narrow lines of pale yellow scales extending the entire length of the thorax; last two segments of the hind feet black..... *sexlineata*. Theobald.
- Upper side of thorax not so marked..... 2

2. Last 2 segments of hind feet and all the tibiae black ..... 3  
 Last 2 segments of hind feet chiefly white; a spot or band of white scales on the base of at least the first 2 segments on all the feet; tibiae with a silvery mark at a point about one-fourth of their length ..... *mediovittata*. Coquillett.
3. With a dot of silvery scales in the middle of the front end of the thorax; first 2 segments of front feet white scaled at their bases ..... *albonotata*. Coquillett.  
 Without such a dot; front feet all black ..... *buskii*. Coquillett.

**GYMNOMETOPA SEXLINEATA.** Theobald (1901).

*Stegomyia sexlineata.* Theobald (1901).

Mono. Culicid. I., 308 (1901), Theobald; Handbook of Gnats, 377 (1902), Giles; Journ. Trop. Med. VII., 367 (1904), Giles; Phil. Journ. Sci. I., 9, 985 (1906), Banks; Mono. Culicid. IV., 210 (1907), Theobald.

Trinidad.

*Additional locality.*—Giles refers to this from Pampanga, Camp Stotsenberg, Angeles P. I. (E. R. Whitmore), but does not seem certain as to its identity. I doubt if it is connected in any way with the West Indian insect.

*Type* in the British Museum.

**GYMNOMETOPA MEDIOVITTATA.** Coquillett (1906).

Canad. Ent. XXXVIII., p. 60, Feb. (1906), Coquillett; Mono. Culicid. IV., 210 (1907), Theobald.

San Domingo, West Indies.

*Type* in the National Museum, Washington.

**GYMNOMETOPA ALBONOTATA.** Coquillett (1906).

Proc. Ent. Soc. Wash. VII., 4, 183 (1906), Coquillett; Mono. Culicid. IV., 211 (1907), Theobald.

Santo Domingo, West Indies.

*Type* in the National Museum, Washington.

**GYMNOMETOPA BUSKII.** Coquillett (1906).

*Stegomyia buskii.* Coquillett (1906).

Canad. Ent. XXXVIII., 60 (1906), Coquillett; Mono. Culicid. IV., 211 (1907), Theobald.

San Domingo, West Indies.

*Type* in the National Museum, Washington.

GENUS **POPEA**. Ludlow (1905).

Canad. Entomologist, XXXVII., 95 (1905), Ludlow; Mono.  
Culicid. IV., 211 (1907), Theobald.

## POPEA LUTEA. Ludlow (1905).

Canad. Ent. XXXVII., 96 (1905), Ludlow; Philip. Journ. Sci. I., 9, 990  
(1906), Banks; Mono. Culicid. IV., 212 (1907), Theobald; Mosq.  
Philip. Isl., 10 (1908), Ludlow.

Philippine Islands.

*Note*.—Stotzenberg should be Stotsenberg in Vol. IV. p. 212  
of my Monograph.

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GENUS **HOWARDINA**. Theobald (1907).

Mono. Culicid. III., 287 (1903); IV., 214 (1907).

Five species occur in this genus,\* two in the West Indies,  
two in Ceylon, and one in the Himalayas. They tabulate  
as follows :—

a. Thorax with golden median lines.

Sides of thorax white ..... *walkeri*. Theobald.

Sides of thorax golden..... *aurites*. Theobald.

aa. Thorax with one median golden line and

golden scales at sides ..... *greenii*. Theobald.

aaa. Thorax with one median line, also a short

one on each side in front, and a curved

one on each side behind ..... *chrysolineata*. Theobald.

aaaa. Thorax not adorned; black, with dense

golden scales ..... *himalayana*. Giles.

## HOWARDINA WALKERI. Theobald (1901).

*Culex (Stegomyia) walkeri*. Theobald (1901).

Mono. Culicid. I., 424 (1901); III., 287 (1903); IV., 215 (1907), Theobald.

Jamaica.

*Type* in the British Museum.

## HOWARDINA AURITES. Theobald (1907).

Mono. Culicid. IV., 216 (1907).

Newcastle, Jamaica.

*Type* in the British Museum.

\* Two new species have been described by Dr. Graham and are placed  
in the Appendix.

*HOWARDINA GREENII.* Theobald (1903).

Mono. Culicid. III., 289 (1903).

Peradeniya, Ceylon.

*Type* in the British Museum.

*HOWARDINA CHRYSOLINEATA.* Theobald (1907).

Mono. Culicid. IV., 218 (1907).

Pundabroya, Ceylon.

*Type* in the British Museum.

*HOWARDINA (?) HIMALAYANA.* Giles (1904).

Journ. Trop. Med. 384, Dec. 15, 1904.

"Wings dark scaled, unspotted, with rather short fork-cells. Tarsi uniformly sooty. Thorax sooty-ground, densely clothed with golden long-curved scales, which do not appear disposed so as to form any definite adornment. Abdomen sooty, with brilliant snowy basal bands which expand laterally to form distinct outstanding tufts.

♀. Head sooty, grounded with a nude median line, flanked on either side with obliquely-directed falciform and erect forked scales (as if hair had been parted), but with no forked scales in the fore part of median band. Outside these are similarly scaled black patches, and outside these again alternate patches of white and black flat scales. Palpi black, much tufted rather longer than the proboscis. Scutellum black with three patches of white falciform scales grouped round the bases of dense tufts of long yellow hairs. Pleurae with some white patches. Legs a warm, deep brown, with minute yellow knee spots, and the bases of the femora pale brown throughout. Venter yellow. A medium-sized mosquito.

*Habitat*.—Naini Thal, in the Himalayas. Bred in August, from a clear pool beneath a waterfall. This species presents much resemblance to Mr. Theobald's genus *Howardina*, but has perhaps too large a proportion of erect forked scales on the head. In *H. greenii*, however, forked scales are present on the nape, and assuming the genus to be retained, it would be difficult to exclude the present form." \*

\* Mr. T. Carter has examined the type and writes: "Appears to belong to the *Pseudohowardina*, since there is no trace of flat scales on the scutellum."

GENUS **HULECOETEOMYIA.** Theobald (1904).

The Entomologist, XXXVII., 163 (1904), Leicester; Mono. Culicid. IV., 220 (1907). Theobald.

Two species have been described in this genus.

**HULECOETEOMYIA TRILINEATA.** Leicester (1904).

The Entomologist, XXXVII., 163 (1904); Mono. Culicid. IV., 219 (1907), Theobald.

*Additional locality.*—Kurseong, 5000 ft., E. Himalayas, 3. vii. and viii. 08 (N. A.), 2 ♀'s; and 1 ♂ in Indian Museum, Calcutta.

*Note.*—These answer exactly to Leicester's carefully described species, but one ♀ shows distinct white abdominal basal bands and also the ♂; the second ♀ is quite typical.

Leicester's type came from Kuala Lumpur.

**HULECOETEOMYIA PSEUDOTAENIATA.** Giles (1901).*Stegomyia pseudotaeniata.* Giles (1901).

The Entomologist, XXXVI., 192 (1901), Giles (♀); Mono. Culicid. I., 312 (1901), Theobald; ibid. IV., 222 (1907), Theobald; Journ. Philip. Science, I., 9, 986 (1906), Banks; Rec. Ind. Mus. II., Pt. III., 30, 291 (1908), Theobald.

♂. Similar to the ♀ in general appearance. Palpi brown, with a white band near apex and a very small one near the base.

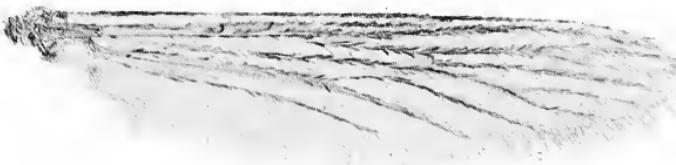


Fig. 89.

Wing of *Hulecoeteomyia pseudotaeniata*. ♂. Giles.

Not quite as long as the proboscis, the apical segment not quite as long as the penultimate, both slightly curved, scanty hair-tufts on the last two segments; proboscis constricted about the apical

third onwards. Last hind tarsal white; fore and mid unguis unequal, uniserrate; hind equal and simple.

Wings with first fork-cell a little longer and narrower than the second, its apex nearer the apex of the wing, its stem nearly as long as the cell; stem of the second fork-cell not quite as long as the cell; mid cross-vein much shorter than the supernumerary cross-vein; posterior cross-vein longer than the mid, rather more than twice its own length distant from it.

Genitalia: basal lobes long and thin, claspers rather long, narrow, with a long dark terminal seg-



Fig. 90.

*Hulecoeteomyia pseudotaeniata*. ♂. Giles.  
Proboscis and palpi.

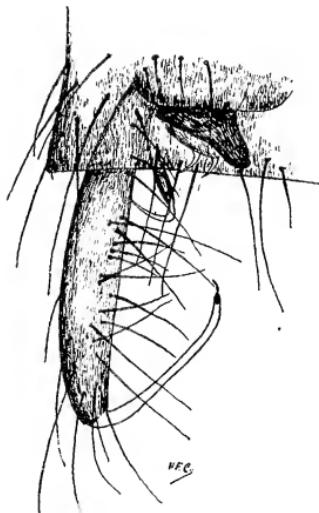


Fig. 91.

*Hulecoeteomyia pseudotaeniata*.  
Giles.  
♂ genitalia.

ment placed slightly to one side; harpes prominent, of two segments, the basal one darker and not so long as the curved blade-like terminal one, the basal one slightly hairy.

*Length*.—4 mm.

*Habitat*.—Dehra Dhun; Lungleb, India (29. vii. 04), 2 ♀'s, 3 ♂'s, very large specimens, 5 mm. (in Indian Museum, Calcutta); Philippine Islands (Banks).

*Observations*.—The male has not been previously described, it closely resembles the ♀. In the original description the last hind tarsal segment in the ♀, was not mentioned as being pure

white, in the two males I have seen it is so, and in one of the two ♀'s from the Philippine Islands. Banks bred this species from larvae taken under similar conditions to those mentioned by Giles.

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### GENUS PHAGOMYIA. Theobald (1905).

Genera Insect. Fam. Culicid. p. 21 (1905); Mono. Culicid. IV., 223 (1907), Theobald.

Two species occur in this genus, and possibly a third, *nigriceps*, Theobald.

*a.* Legs with tarsi banded each end.

Thorax black, with snowy median spot in front, prolonged at the sides into a pair of lateral bars, two humeral spots, and two in front of wing roots ..... *gubernatoris*. Giles.

*aa.* Legs unbanded.

Thorax brown, golden scales over and in front of wing roots.

Abdomen banded ..... *irritans*. Theobald.

Abdomen unbanded, head black ..... *nigriceps*. Theobald.

#### PHAGOMYIA GUBERNATORIS. Giles (1901).

*Stegomyia gubernatoris*. Giles (1901).

Entomologist, 104 (1901), Giles; Mono. Culicid. I., 314 (1901), Theobald.

Allahabad, Northern India.

Type in the British Museum.

#### PHAGOMYIA IRRITANS. Theobald (1901).

*Stegomyia irritans*. (1901).

Rep. Liverpool School, Trop. Med., Pt. III., App. (1901); Mono. Culicid. II., 313 (1901).

Bonny.

Type in the British Museum.

PHAGOMYIA? NIGRICEPHALA. Theobald (1901).

*Stegomyia nigricephala*. Theobald (1901).

Rep. Liverpool School, Trop. Med. IV., App. (1901); Mono. Culicid. II., 315 (1901); III., 147 (1903), Theobald.

Bonny; Buguma, Nigeria.

Type in the British Museum.

### GENUS MYXOSQUAMUS. nov. gen.

Head with rather loosely applied flat scales over most of its area, a basal median patch of narrow-curved scales, and narrow-curved ones around the eyes, thin upright forked scales; palpi short in the ♀, terminal segment as long as the rest of the palp; thorax with narrow-curved scales; scutellum with the mid lobe clothed with some small, narrow, flat scales and narrow-curved ones at the back, sides, and border, lateral lobes with rather large narrow-curved scales. Wings scales, *Taeniorhynchus*-like, but smaller.

This genus can at once be told by the scutellar ornamentation and alar scales.

### MYXOSQUAMUS CONFUSUS. nov. sp.

Thorax rich brown with scattered golden scales; head pale brown in the middle, a dark patch on each side; proboscis and palpi black; pleurae bright, pale brown with pale puncta; scutellum pale-scaled in certain lights, dark in others. Abdomen black with basal pale bands which spread out laterally; venter with ochreous basal and brown apical bands. Legs deep brown, unbanded, a yellow spot at the apex of the hind tibiae.

♀. Head black, clothed with flat black scales in front, thin narrow-curved pale scales behind, then a patch of flat dull creamy scales, still more to the side a patch of flat dark ones, and then pale creamy ones again, narrow-curved golden scales along the

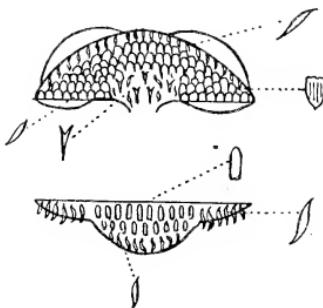


Fig. 92.  
Genus *Myxosquamus*. nov. gen.  
Head and scutellum.

eye borders and black upright forked scales, two dark brown chaetae project forwards between the eyes, and three or four long ones on each side projecting inwards. Clypeus and palpi and proboscis deep blackish-brown, the palpi paler at the base with some long black chaetae; proboscis with some pale scales towards the base; antennae brown, basal segment fawn-coloured with some small dark scales on one side, base of second segment testaceous.

Thorax rich brown, clothed with narrow-curved brown and golden scattered scales; jet black chaetae over the roots of the wings, and as two lines behind the mesonotum; scutellum pale brown, the mid lobe with small narrow flat dusky scales at its base, then similar formed dull creamy ones, and then near the posterior border dull creamy narrow-curved ones, lateral lobes with long narrow-curved pale creamy scales; posterior border-bristles black, eight to the mid lobe; viewed with the head pointing *away* from the light, the median lobe scales are all dusky, the lateral still creamy-white; metanotum chestnut brown; pleurae bright brown with patches of flat white scales; prothoracic lobes pale brown with large narrow-curved creamy scales.

Abdomen pale testaceous, clothed with black scales, showing dull violet reflections in some lights, with very narrow pale basal bands which spread out laterally; posterior border-bristles dull golden brown; venter with pale creamy basal bands, dark apical ones to the segments.

Legs uniformly brown with pale coxae with patches of flat

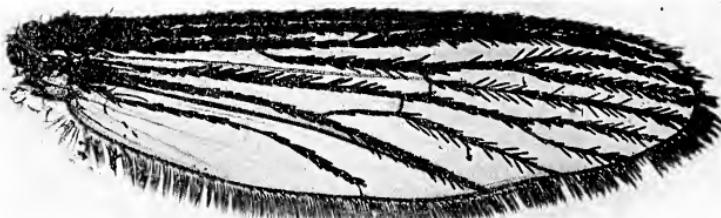


Fig. 93.  
Wing of *Myxosquamus confusus*. ♀. n. sp.

creamy scales; chaetae bright golden in some lights, black in others; unguis all equal and uniserrate.

Wings rather short and broad; the first fork-cell longer and narrower than the second, its base slightly nearer the base of the

wing, its stem nearly half the length of the cell; stem of the second fork-cell two-thirds the length of the cell; posterior cross-vein rather more than its own length distant from the mid; wing scales rather broad.

*Length.*—4 mm.

*Habitat.*—Accra (Dr. Graham).

*Time of capture.*—3. iii. 07.

*Observations.*—Described from a single ♀ taken in the hospital. The squamose characters at once separate it.

*Type* in the British Museum.

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**GENUS POLYLEPTIOMYIA.** Theobald (1905).

Genera. Ins. Fam. Culicid. 21 (1905); Mono. Culicid. IV., 223 (1907),  
Theobald.

A single species only described in this genus.

**POLYLEPTIOMYIA ALBOCEPHALA.** Theobald.

*Stegomyia albocephala.* Theobald.

Mono. Culicid. III., 140 (1903).

Gambia.

*Type* in the British Museum.

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**GENUS PSEUDOHOWARDINA.** Theobald (1907).

Mono. Culicid. IV., 223 (1907).

Two species occur in this genus, one from N. America, the other from Ceylon.

**PSEUDOHOWARDINA TRIVITTATA.** Coquillett (1902).

*Culex trivittatus.* Coquillett (1902).

*Culicada trivittata.* Felt.

*Ochlerotatus trivittatus.* Coquillett.

N. Y. Ent. Soc. Journal, X., 194 (1902), Coquillett; Mono. Culicid. IV.,  
224 (1907), Theobald.

N. America.

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*PSEUDOHOWARDINA CHRYSOSCUTA.* nov. sp.

Head brown, golden in middle; palpi and proboscis deep brown, basal segment of antennae honey yellow. Thorax reddish-brown adorned with lines of golden and black scales and a mass of golden scales near the head and sides in front. Abdomen black, unbanded, with basal lateral pale spots and basal pale bands ventrally. Legs unbanded.

♀. Head brown with narrow-curved golden scales in the middle in front, more ochreous behind and pale brown upright forked scales, a large area of flat black scales on each side, then some yellow ones; black chaetae curving over the eyes. Clypeus brown; palpi small deep brown; antennae brown, basal segment



Fig. 94.

Wing of *Pseudohowardina chrysoscuta*. ♀. n. sp.

honey yellow with some small black curved hairs on one side; proboscis deep brown.

Thorax rich brown clothed with bright golden and black narrow-curved scales, the former being dense near the head and passing down as a distinct line on each side towards the wings, a broad median and two narrow submedian lines pass backwards, also a patch of golden scales just over the roots of the wings, other scales jet black; a golden scaled line on each side of the bare space in front of the scutellum; thick black chaetae over roots of wings; scutellum with golden narrow-curved scales and dark border-bristles; metanotum brown; pleurae ochreous with pale flat scales and pale and dark chaetae.

Abdomen black unbanded above, but with basal lateral white spots; venter with broad basal white bands; border-bristles pallid.

Legs deep brown, unbanded, pale at their base and femora beneath; unges all equal and uniserrate.

Wings with large rather clavate brown scales; first fork-cell longer but very little narrower than the second, somewhat contracted towards the apex, its base scarcely nearer the base of the wing than that of the second, its stem about two-thirds the length of the cell; stem of the second fork-cell as long as the cell; posterior cross-vein a little longer than the mid and about one and a half times its own length distant from it.

*Habitat*.—Peradeniya, Ceylon (Green).

*Time of capture*.—iv. 1907.

*Observations*.—Described from one ♀. It looks like *Howardina chrysolineata*, Theob., but the golden median thoracic line is wider and scutellum is clothed with golden narrow-curved scales.

*Type* in the British Museum.

### GENUS **CULICIOMYIA**. Theobald (1907).

Mono. Culicid. IV., 227 (1907).

This genus contains twelve species. They tabulate as follows :—

*a.* Abdomen unbanded.

*β.* First fork-cell longer than second.

Thorax reddish-brown ..... *inornata*. Theobald.

Thorax brownish-grey ..... *uniformis*. n. sp.

Thorax deep brown ..... *nigerrima*. n. sp.

*ββ.* First fork-cell no longer than

second ..... *ceylonica*. Theobald.

*aa.* Abdomen with basal and apical bands ... *annulata*. Theobald.

*aaa.* Abdomen with basal grey bands..... *pulla*. Theobald.

Abdomen with basal white bands .....

Thorax rich brown with 2 creamy

spots in front ..... *dalzieli*. n. sp.

Thorax fawn coloured ..... *annuloabdominalis*. n. sp.

*aaaa.* Abdomen with apical grey lateral spots.

Thorax dark brownish-grey ..... *freetownensis*. Theobald.

Thorax fawn coloured with one median

dark line ..... *nigrochaetae*. Theobald.

Thorax dark brown with 2 parallel dark

median lines ..... *nebulosa*. Theobald.

*aaaaa.* Abdomen first 2 segments unbanded.

3rd, 4th, and 5th, with basal white

bands; lateral pale spots, first 2

grey, others creamy yellow. Very

small, 2 mm. ..... *minutissima*. Theobald.

**CULICIOMYIA INORNATA.** Theobald (1907).

Mono. Culicid. IV., 227 (1907).

Sarawak (Kuching).

*Additional locality.*—Philippine Islands (Ludlow).

*Type* in the British Museum.

**CULICIOMYIA UNIFORMIS. nov. sp.**

Thorax dusky brownish-grey; palpi and proboscis and antennae dark brown. Abdomen deep brown to black, unbanded and unspotted. Legs deep brown, coxae pale, femora pale beneath. Wings with long fork-cells. Male palpi black, acuminate, longer than proboscis.

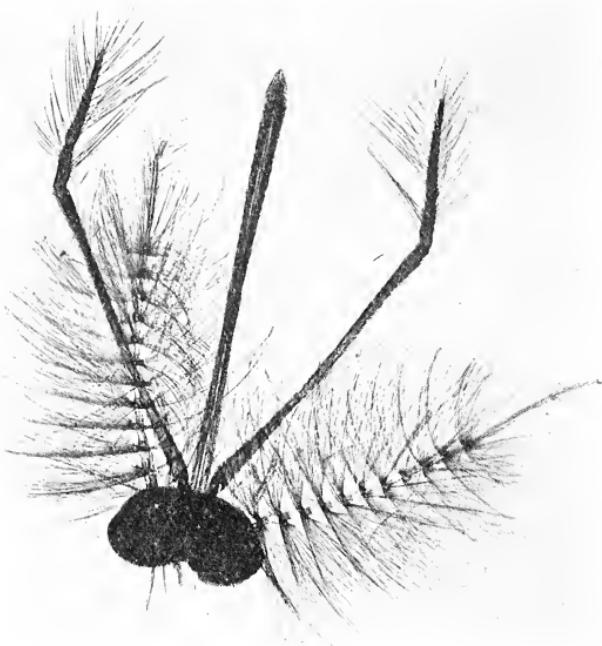


Fig. 95.  
*Culiciomyia uniformis.* ♂. Theobald. Head.

♀ Head slaty grey with narrow-curved dull creamy scales, broader, almost flat, white ones around the eyes, flat dusky and white ones laterally, a few broader creamy scales between the eyes in front, and numerous thin, black upright, forked scales; clypeus brown; proboscis, palpi, and antennae black.

Thorax dusky brownish-grey, with some darker lines on the integument, with uniformly disposed, narrow-curved bronzy scales over its surface; scutellum deep brown with narrow-curved dull creamy scales and six brown posterior border-bristles; metanotum shiny black; pleurae pale.

Legs deep brown with violet and dull bronzy reflections; coxae grey, venter of femora pale; unguis small, equal and simple.



Fig. 96.  
Wing of *Culiciomyia uniformis*. ♀. n. sp.

Abdomen black with pale border-bristles; in some, traces of grey lateral scales, more or less apically placed on the segments; venter ochreous with pale scales.

Wings with long fork-cells, the first submarginal much longer, but very little narrower, than the second posterior cell, its base nearer the base of the wing, its stem less than one-fourth the length of the cell; stem of the second fork-cell about one-third the length of the cell; posterior cross-vein longer than the mid, about its own length distant from it. Halteres with pale stem and fuscous knob.

*Length.*—4·8 to 5 mm.

♂. Head clothed with narrow-curved grey to creamy ones in the middle, flat, rather loose, white ones in front and around the eyes and sides, some ochreous ones at the sides behind, ochreous tipped, upright forked scales in the middle, dark ones near the eyes and a few at the sides narrower than the median ones. Palpi and proboscis brown; the former longer than the proboscis by about half the apical segment; the apical segment twice as long as the penultimate, bluntly acuminate; long black hairs on each side, also on the apical half of the penultimate;



Fig. 97.  
*Culiciomyia uniformis*. n. sp.  
♂ palp and proboscis.

antennae with brown plume hairs ; the segments yellowish-brown above, the lower half white, the areas separated by the verticillate hairs. Legs as in the female ; but the fore and mid unguis are unequal, both uniserrate, the larger with a large tooth, the smaller with a very small one close to the base ; hind equal and simple.

Wings with rather long fork-cells, the first longer and narrower than the second, their bases nearly level ; stem of

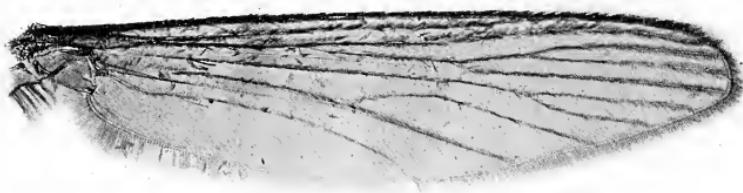


Fig. 98.  
Wing of *Culiciomyia uniformis*. ♂. n. sp.

the first one-third the length of the cell, stem of the second about one-half the length of the cell ; posterior cross-vein longer than the mid, about its own length distant from it.

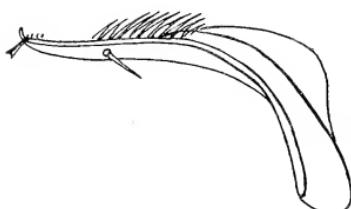


Fig. 99.  
*Culiciomyia uniformis*. n. sp.  
Male clasper.

Abdomen like the ♀, except that there are white scales on the dorsum of the last segment ; genitalia with short stiff spines on one side near apex of clasper, placed in a group backwardly projecting ; a prominent spine on one side as in *C. freetownensis*, but the foliate plate is broader.

*Length*.—5 mm.

*Habitat*.—Obuasi (Dr. Graham).

*Time of capture*.—20. vi. 07 ; 30. ix. 07 ; 15. viii. 07 ; 15. 20. xii. 07.

*Observations*.—Described from a series of ♂'s and ♀'s taken in the bush and on bush paths ; one female taken in bedroom.

This species comes very near *Culiciomyia freetownensis*, Theobald, but can be told by the much longer fork-cells and the slightly different male genitalia. It also resembles *Culiciomyia nigrochaetae*, Theobald, but can be told by the male unguis, and from *Culex cinereus*, Theobald, by the six mid scutellar bristles.

There are traces of dull pale scales at the sides of the abdomen, but only seen in certain lights.

Type in the British Museum.

**CULICIOMYIA NIGERRIMA. nov. sp.**

Head blackish-brown with paler sides and narrow eye border; palpi and proboscis dark brown. Thorax deep brown. Abdomen black with very narrow basal white bands. Legs blackish-brown; unbandied. Wings with dark brown scales.

♀. Head black, with narrow-curved pale scales behind, black flat scales around the front and sides, some pale ones bordering the eyes and other pale flat scales at the sides; a few scattered black upright forked scales and black chaetae; antennae deep brown; clypeus, proboscis and palpi black.

Thorax black, with small narrow-curved bronzy scales and jet black chaetae; scutellum brown with narrow-curved dull golden scales; metanotum black.

Abdomen black and black scaled, with pale creamy basal bands on the fourth, fifth and sixth segments and pallid border-bristles, the seventh with white basal lateral spots; venter black with some pallid scales.

Legs black, unbanded; venter of femora and tibiae pale, also venter of metatarsi to some extent; ungues small equal and simple.

Wings with rather short fork-cells, the first fork-cell longer but no narrower than the second, its base scarcely nearer the



Fig. 100.

Wing of *Culiciomyia nigerrima*. ♀. n. sp.

base of the wing, its stem about half the length of the cell; stem of the second fork-cell about two-thirds the length of the

cell ; posterior cross-vein a little longer than the mid, rather more than twice its own length distant from it.

*Length.*—4 mm.

*Habitat.*—Trincomalee, Ceylon (Green).

*Time of capture.*—x. 07.

*Observations.*—Described from one perfect ♀. A very marked dark *Culiciomyia* with noticeable abdominal banding. Like *C. ceylonica*, Theobald, but at once told by the abdominal basal bands and different fork-cells.

*Type* in the British Museum.

**CULICIOMYIA CEYLONICA.** Theobald (1907).

Mono. Culicid. IV., 236 (1907).

Ceylon.

*Type* in the British Museum.

**CULICIOMYIA ANNULATA.** Theobald (1907).

Mono. Culicid. IV., 230 (1907).

Sarawak (Kuching).

*Type* in the British Museum.

**CULICIOMYIA PULLA.** Theobald (1905).

*Culex pullus.* Theobald (1905).

Ann. Mus. Nat. Hung. III., 87 (1905); Mono. Culicid. IV., 232 (1907),  
Theobald.

Muina, New Guinea.

*Type* in the National Museum, Budapest.

**CULICIOMYIA DALZIELI.** nov. sp.

Head grey and brown in the middle, with a large black spot on each side, then a white spot, then black. Proboscis and palpi black. Thorax rich brown with two pale creamy spots in front, two nearer together in the middle and some scattered golden scales in the middle, two pairs of lateral pale spots following on from the first; scutellum pale scaled. Abdomen black with basal white bands. Legs black, unbanded.

♀. Head dark grey, with a median triangular patch of very small bronzy narrow-curved scales not extending back to the nape, on each side large irregular grey narrow-curved scales,

then a patch of flat black scales, then flat grey ones and then black again; the narrow scaled area with long black upright forked scales, and some long forwardly projecting deep brown chaetae near the eye borders. Proboscis coppery brown, darker at the apex; palpi black with some long black chaetae; clypeus black; antennae deep brown, basal segment deep ferruginous, dark on each side; base of the second segment pale ferruginous.

Thorax black, clothed with small narrow-curved scales, the majority rich bronzy brown, giving a general brown appearance, with two pale creamy spots right in front, and two on each side following it up to base of the wings in a line; two median creamy yellow spots; almost grey scales over the roots of the

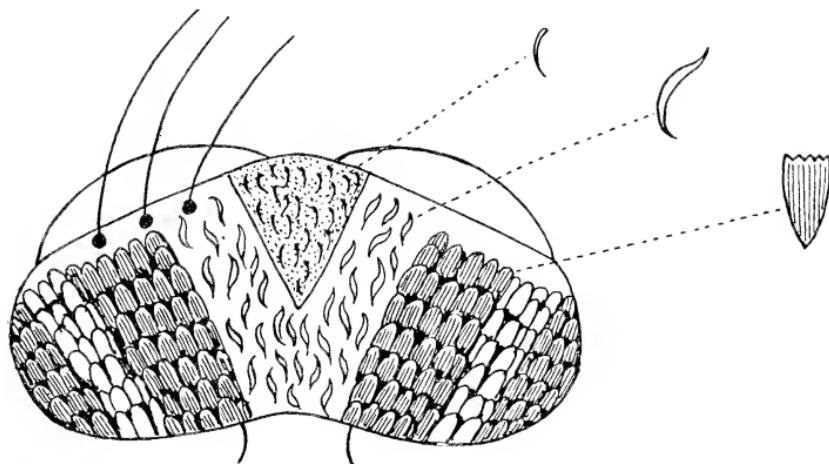


Fig. 101.  
*Culiciomyia dalzieli*. ♀. n. sp. Head.

wings and behind; some scales here and there over all the surface show golden reflections; dense rich brown chaetae over the base of the wings; scutellum bright brown like the back of the mesonotum, all three lobes clothed with narrow-curved grey scales, border-bristles rich brown; metanotum deep brown; pleurae brown with patches of small flat grey scales.

Abdomen black with basal white bands and pale border-bristles; venter mostly pale creamy scaled.

Legs blackish-brown, femora pale brown beneath, and at the base, femora and tibiae spinose; a pale knee spot and a pale apical spot on the mid and hind tibiae; fore and mid unges equal, uniserrate, hind equal and simple.

Wing scales brown; first fork-cell longer and narrower than

the second fork-cell, its base nearer the base of the wing, its stem not quite half the length of the cell; stem of the second fork-cell about as long as the cell; posterior cross-vein longer than the mid, and a little more than its own length distant from it. Halteres pale creamy.

*Length.*—4 mm.

*Habitat.*—Katagum, N. Nigeria (Dalziel).

*Time of capture.*—9. v. 07.

*Observations.*—Described from a single perfect ♀. Easily told by the marked cephalic ornamentation.

*Type* in the British Museum.

CULICIOMYIA ANNULOABDOMINALIS. nov. sp.

Head brown, somewhat darker at the sides with a pale border around the eyes; palpi, proboscis and antennae brown. Thorax fawn-coloured. Abdomen black with basal white bands and white venter. Legs unbanded, deep brown. Wings with yellowish tinged veins.

♀. Head brown with scanty small narrow-curved pale scales

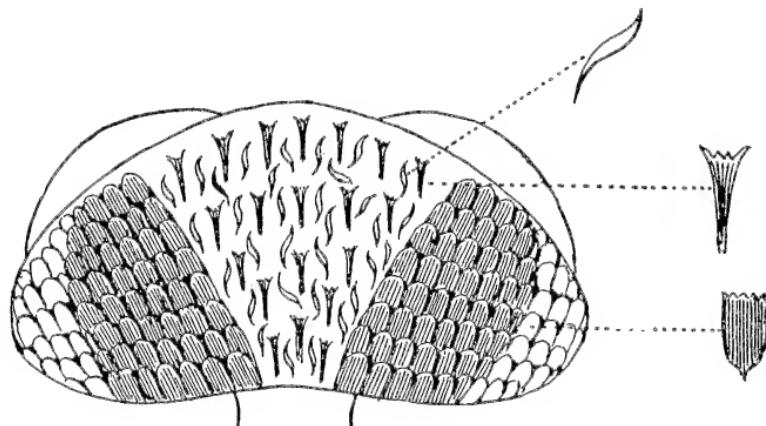


Fig. 102.

*Culiciomyia annuloabdominalis.* ♀. n. sp. Head.

and dense upright dark forked scales, a large patch of flat dark scales at the sides, followed by a small area of pale ones and some pale ones around the eye border of the dark patch; clypeus brown; palpi rather thin, black; antennae deep brown; proboscis black.

Thorax dark brown, uniformly and thickly clothed with small

narrow-curved fawn-coloured scales, with black chaetae ; scutellum with similar scales and deep brown border-bristles ; metanotum brown ; pleurae pale.

Abdomen black with basal white bands, except the basal and second segments, the former has two median black scaled spots and long brown hairs ; posterior border-bristles brown with golden reflections ; venter entirely creamy scaled.



Fig. 103.  
*Culiciomyia annuloabdominalis*, ♂. n. sp. Head.

Legs uniformly deep blackish-brown, except under side of femora, which are paler ; unges small, equal and simple, much curved.

Wings with brown scales, but the veins show yellowish reflections, scales dense on the apices of the veins ; *first fork-cell longer but no narrower than the second*, its base a little nearer the apex of the wing than that of the second fork-cell, its stem more than half the length of the cell, stem of the second fork-cell not

quite as long as the cell; posterior cross-vein longer than the mid, about one and a half times its length distant from it; the length of the second fork-cell is very noticeable.

*Length*.—5 mm.

♂. Like the ♀. Palpi and proboscis brown; the former acuminate, thin and with scarcely a trace of hair-tufts, longer than the proboscis by rather more than the last segment, which is one and a half times the length of the penultimate; antennae very plumose, banded grey and brown with flaxen-brown plume hairs. Labella thin and acuminate.

Wings with short fork-cells, first longer and a little narrower than the second fork-cell, its base nearer the apex of the wing than that of the second, its stem longer than the cell, stem of the second fork-cell also longer than the cell; posterior cross-vein about twice its own length distant from the mid.

Fore and mid unguis unequal, both uniserrate, the smaller with a very small tooth, hind equal and simple. Genitalia marked, a dark horn-like process from one side of the top of the basal lobe; claspers curved with fine backwardly projecting teeth on one side.

*Length*.—5 mm.

*Habitat*.—Peradeniya and Hakgala, Ceylon (Green).

*Time of capture*.—January and May 1907.

*Observations*.—Described from two ♀'s and three ♂'s. A marked species but looking casually like a *Culex fatigans*, but the uniformly fawn-coloured thorax separates it and the very long second fork-cell. The male genitalia are very marked.

*Type* in the British Museum.

#### *CULICIOMYIA FREETOWNENSIS.* Theobald (1901).

*Culex freetownensis.* Theobald (1901).

Mono. Culicid. II., 69 (1901); IV., 234 (1907), Theobald.

Sierra Leone.

*Additional locality*.—Obuasi, Ashanti (Graham).

*Time of capture*.—20. and 21. viii. 07; 7. 8. 20. 21. and 29. xi. 07, at Obuasi.

*Type* in the British Museum.

*Notes*.—Specimens caught by Dr. Graham in Ashanti show that *freetownensis* comes in the genus *Culiciomyia* and not in *Culex*, in which genus I originally placed this species.

Perfect specimens show the venter of the abdomen to be white, except the apical segment, which is deep black.

*Type* in the British Museum.



Fig. 104.  
Wing of *Culiciomyia freetownensis*. ♀. Theobald.

**CULICIOMYIA NIGROCHAETA**E. Theobald (1901).

*Culex nigrochaetae*. Theobald (1901).

Mono. Culicid. II., 60 (1901); IV., 227 (1907), Theobald.

Lagos.

*Additional localities*.—Kumasi; Obuasi, Ashanti (Graham).

*Date of capture*.—20. x. 07, at Kumasi.

*Observations*.—This species clearly comes in the genus *Culiciomyia*. Dr. Graham took two ♀'s in the hospital at noon at Kumasi and one in a bedroom at Obuasi.

*Type* in the British Museum.

**CULICIOMYIA NEBULOSA**. Theobald (1901).

*Culex nebulosus*. Theobald (1901).

Rept. Liverpool Sch. Trop. Med., p. x., App. (1901); Mono. Culicid. II., 331 (1901), Theobald.

Old Calabar.



Fig. 103.  
Wing of *Culiciomyia (Culex) nebulosus*. ♀. Theobald.

*Additional locality.*—Obuasi (Graham).

*Time of capture.*—5. 17. vi. 1907; 1 and 10. ix.; 2. 3. 6. 9  
27. x. and 1. xi. 1907 (Graham) (at Obuasi).

*Observations.*—Graham took this insect in bedrooms, hospital latrines, in a house, on windows after rain, and one in the bush at 5 P.M., others at 1, 7 and 8 P.M. It comes in the genus *Culiciomyia*, and not *Culex*.

*Type* in the British Museum.

**CULICIOMYIA MINUTISSIMA.** Theobald (1907).

Mono. Culicid. IV., 235 (1907.)

Peradeniya, Ceylon.

*Type* in the British Museum.

**GENUS EUMELANOMYIA.** nov. gen.

Head clothed almost entirely with rather loose flat scales, a small median basal area of narrow-curved ones and very thin upright forked scales. Thorax and scutellum with rather long narrow-curved scales. Palpi of ♀ short, of two segments, the apical one equal in length to the other; in the male a little shorter than proboscis, apex blunt with a few long chaetae, no hair tufts. Male genitalia very similar to *Culiciomyia*, but there are two foliate plates on the basal lobe. Fork-cells rather short.

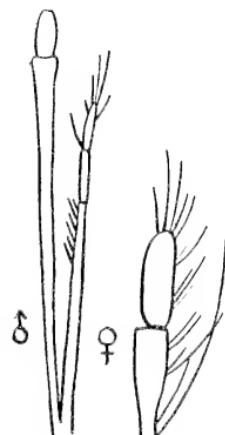


Fig. 106.

Genus *Eumelanomyia*.

♂ and ♀ palpi. This rather obscure genus comes near *Culiciomyia*, but can be distinguished by the short two-segmented ♀ palpi, shorter male palpi, and the peculiar bifoliate nature of the genitalia, the clasper, however, strongly resembling the former genus.

**EUMELANOMYIA INCONSPICUOSA.** nov. sp.

Head, thorax and abdomen deep brown, some grey scales on the head in the middle and sides in front; venter grey scaled. Legs, palpi and proboscis dark brown.

♀. Head almost black, clothed with flat scales except for a

from the mid ; scales dense, straight, and rather thick on the apex of the wing.

*Length.*—3 mm.

♂. Head similar to ♀, but with more prominent, dark, upright, forked scales. Thorax and abdomen as in the ♀. Legs with under side of femora pale at base ; fore and mid unguis unequal, both large and small are uniserrate ; hind small, equal



Fig. 108.

Wing of *Eumelanomyia inconspicuosa*. ♂. n. sp.

and simple. Wings with short fork-cells, the first longer and narrower than the second, its base nearer the base of the wing ; its stem a little more than half the length of the cell, stem of the second posterior as long as the cell ; posterior cross-vein three times its own length distant from the mid.

The male palpi not quite as long as the proboscis, blunt at apex, which bears long chaetae, no signs of hair-tufts.

Genitalia with the clasper, with short thick spines on its edge near apex and one lateral spine ; two foliate plates below,

and the lateral process of the basal lobe near its apex, with three long broad chaetae, four short ones acutely elbowed near the apices.

*Length.*—3 mm.

*Habitat.*—Obuasi, Ashanti (Dr. Graham).

*Time of capture.*—7. 21. viii., 29. ix., 2. x., and 20. xi. 07.

*Observations.*—Caught on bush paths and in the bush, 11 A.M.

Described from several ♂'s and ♀'s. It is a very obscure species, and unless examined microscopically would not be separated from several others described here. The differences, however, are great. The male genitalia differ markedly, also the

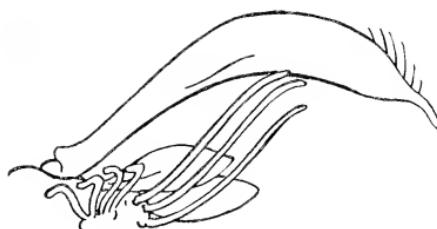


Fig. 109.

*Eumelanomyia inconspicuosa*. n. sp.  
♂ clasper, etc.

small basal median patch of thin narrow-curved pale golden scales ; flat scales dull white in front and the middle and along the eye borders, rest dark ; clypeus brown ; palpi and proboscis deep brown ; antennae brown ; palpi hairy.

Thorax black and shiny, with paler scales of a brownish hue, rather long and thin narrow-curved scales ; some short pale chaetae in front and sides, longer dark brown ones over the roots of the wings ; scutellum black with long thin pale scales and five dark brown median posterior border bristles ; metanotum shiny

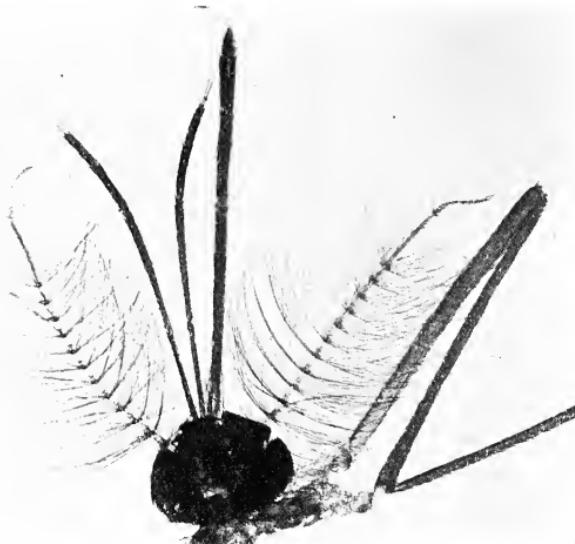


Fig. 107.  
*Eumelanomyia inconspicuosa*. ♂. n. sp. Head.

black ; pleurae and prothoracic lobes with small dull white flat scales.

Abdomen deep brown, unbanded, with some paler scales laterally and pale border-bristles ; venter mostly with dull white scales.

Legs uniformly brown, except the coxae and trochanters, which are rich ochreous, the former with flat dull white scales ; unguis small, equal and simple.

Wings with short fork-cells ; the first longer and narrower than the second, its base slightly nearer the base of the wing, its stem less than half the length of the cell, stem of the second posterior cell about two-thirds the length of the cell ; posterior cross-vein sloping backwards, about twice its own length distant

male and female palpi, and necessitate it being placed in a distinct genus.

*Type* in the British Museum.

GENUS **NEOMACLEAYA**. Theobald (1907).

Mono. Culicid. IV., 238 (1907).

A single species only so far described, and a distinct variety.

**NEOMACLEAYA INDICA**. Theobald (1907).

Mono. Culicid. IV., 238 (1907).

India.

*Additional localities*.—Woodlands, Ceylon (Green), 9. x. 1907 (1 ♀); Philippine Islands (Ludlow).

*Note*.—The Ceylon specimen does not show the median pale cephalic line, but the scales seem to be hidden, the head having sunk in in the middle line; all other characters agree.

*Type* in the British Museum.

**NEOMACLEAYA INDICA**. Theobald.

var. *simplex*. Theobald (1908).

Rec. Ind. Mus. II., pt. iii., No. 30, 291 (1908), Theobald.

Very similar to the type, but the abdomen has only the median lateral white spots, no trace of banding, and the first submarginal cell is longer than the second posterior cell.

The other characters all very similar.

*Habitat*.—Sylhet, Assam (Major Hall).

*Time of capture*.—June. (A single ♀.)

*Type* in the Indian Museum, Calcutta.

GENUS **DANIELSIA**. Theobald (1904).

The Entomologist, XXXVII., 78 (1904); Mono. Culicid. IV., 240 (1907).

Five species have been described in this genus; they tabulate as follows:—

- a. Proboscis banded..... *albotaeniata*. Leicester.
- aa. Proboscis unbanded.
  - β. Legs basally pale banded.
  - γ. Thorax deep brown, with a broad creamy area on each side, expanding in front, and a short creamy median line ..... *wellmanii*. Theobald.

- $\gamma\gamma$ . Thorax with bright creamy-grey scales ..... *mediomaculata*. Theobald.  
 $\beta\beta$ . Legs with bands involving both sides of the joints ..... *tripunctata*. Theobald.  
 $\beta\beta\beta$ . Legs unbanded ..... *nigrescens*. Theobald.

**DANIELSIA ALBOTAENIATA.** Leicester (1904).

Entomologist XXXVII., 111 (1904), Leicester; Mono. Culicid. IV., 241 (1907), Theobald.

Kuala Lumpur, Federated Malay States.

**DANIELSIA WELLMANII.** Theobald (1905).

The Entomologist XXXIX., 103 (1905), Theobald; Mono. Culicid. IV., 244 (1907), Theobald.

Bibé, Angola.

*Note*.—A second female sent by Dr. Creighton Wellmann has a partly denuded scutellum, but on the mid lobe are undoubtedly

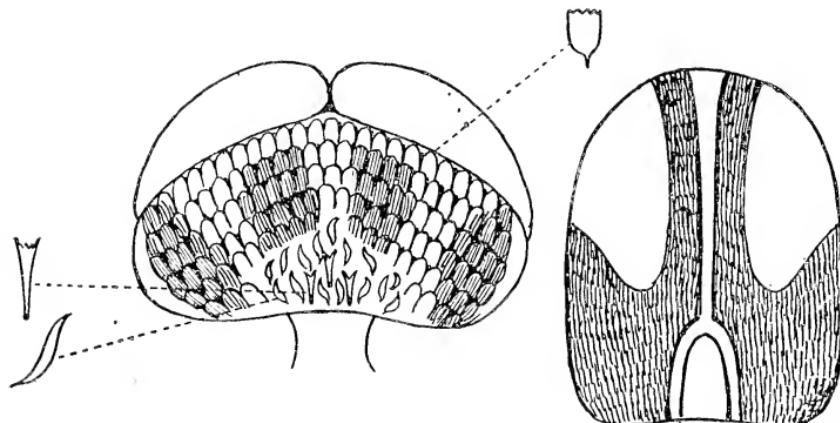


Fig. 110.  
*Danielsia wellmanni*. ♀. Theobald.  
 Cephalic and thoracic adornment.

flat scales. I cannot see if these are normal or from some rubbed part.

*Type* in the British Museum.

**DANIELSIA MEDIOMACULATA.** Theobald (1907).

Mono. Culicid. IV., 245 (1907).

Para, Brazil.

*Type* in the British Museum.

dark brown on clavate area, which is spiny below, apex spiny; antennae flaxen-brown. Thorax rich brown with two median pale parallel shiny lines, which seem to continue around the bare space before the scutellum, a darkened area on each side of the parallel lines in front; pleurae pale ochreous. Abdomen deep brown with basal lateral yellow spots which form almost a continuous line on each side, densely hairy. Legs unbanded,

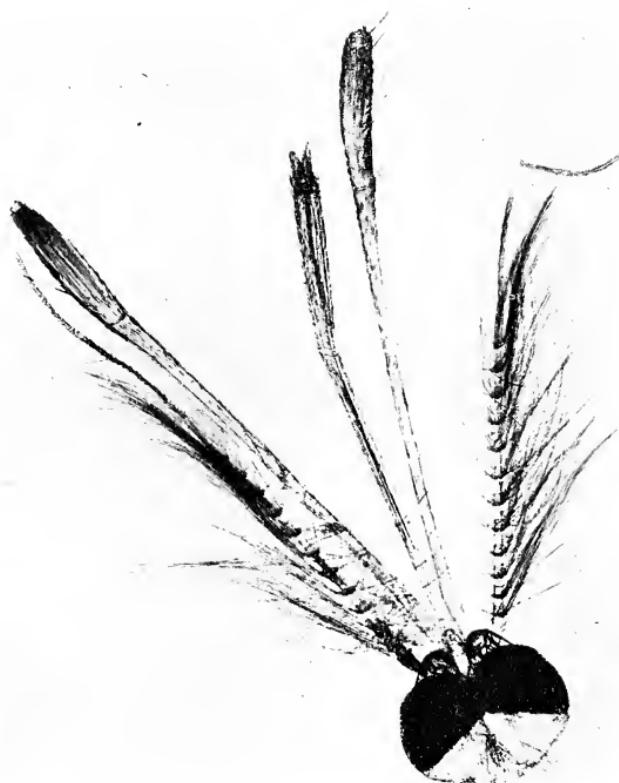


Fig. 111.  
*Hispidomyia hispida*. ♂. n. sp. Head.

deep brown, except base and under side of femora, with brassy reflections; tibiae spinose. Wings with scanty brown scales.

♂. Head clothed with flat creamy-white scales with ochreous and iridescent reflections, a small area near the nape of narrow-curved golden scales, a larger area of black upright forked scales and some almost golden along the nape; four long black chaetae on each side on the ocular border projecting inwards, a few small

DANIELSIA TRIPUNCTATA. Theobald (1907).

Mono. Culicid. IV., 247 (1907).

Rio Grande, Brazil.

*Type* in the British Museum.

DANIELSIA NIGRESCENS. Theobald (1907).

Mono. Culicid. IV., 248 (1907).

St. Amaro, Brazil.

*Type* in the British Museum.

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GENUS **HISPIDIMYIA.** nov. gen.

Head clothed with flat scales, except for a small group of minute narrow-curved ones on the nape and a larger group of upright forked scales. Proboscis swollen on the apical third, composed of two segments, the joint at the apical third; labella acuminate. Antennae of male densely plumose with two very long terminal segments pilose only; other segments thick, basal one globular; palpi of male a little longer than the proboscis, clavate at the apex; of two segments the apical one short and clavate? with ventral chaetae and two large and some small apical ones. Palpi of ♀ about one-fourth the length of the proboscis. Prothoracic lobes with large curved spines in ♂, smaller in ♀; mesothorax and scutellum with narrow-curved scales, the whole thorax with long dense-curved backwardly projecting chaetae. Abdomen densely hairy in the male, especially ventrally, also hairy in ♀. Wings with only median vein scales, spatulate in the male, some lateral broad short scales on the second vein, etc., in the ♀. Fork-cells short in both sexes, the first with its base nearer the apex of the wing than the second.

A marked genus, easily told by the male and female palpi, scale ornamentation and wing venation and scales.

Very near *Megaculex*, Theobald, but differs in head ornamentation.

**HISPIDIMYIA HISPIDA.** nov. sp.

Head brilliant creamy-white; proboscis ochreous, dark at apex; palpi of ♂ clavate, a little longer than proboscis, ochreous,

short golden chaetae in front between the eyes and two long black chaetae ; there is a median parting of the flat scales.

Clypeus apparently very small ; proboscis ochreous with some dark scales above, dark at the apex, which is slightly swollen ; palpi a little longer than the proboscis, clavate and blunt at the apices, ochreous below, some dark scales above, clavate area black with violet reflections ; clavate area with black chaetae below, two large black apical chaetae and some smaller ones.

Antennae with the segments thick and short, except the last two, which are long, thin and pilose, rest with dense flaxen brown plume hairs ; basal segment very large, globular and dark.

Thorax rich ochreous brown, clothed with black narrow-curved scales, showing bronzy metallic reflections, leaving two median bare parallel lines ; bare space in front of the scutellum, pale especially at the sides, the area looking like a continuation of the two bare pale median lines ; numerous black, backwardly curved chaetae, a patch of small golden ones before the base of the wing ; scutellum shiny, with pale reflections like the bare space before it, clothed with narrow-curved bronzy scales ; six posterior border-bristles, three on each side of the mid lobe ; metanotum ochreous brown, darker in the middle ; prothoracic lobes ochreous with numerous long curved brown chaetae with bright golden reflections ; pleurae pale ochreous with grey reflections, some dusky and white semi-transparent flat scales.

Abdomen clothed with black scales with dull violet reflections, each segment with large basal lateral yellowish spots, which on some of the segments extend to their apical borders, last segment with many ochreous scales ; posterior border-bristles golden, dense

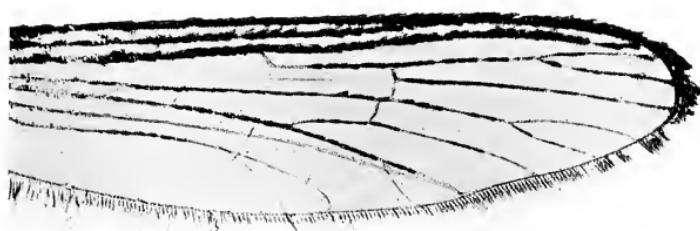


Fig. 112.  
Wing of *Hispidimyia hispida*. ♂. n. sp.

lateral and apical bristles brown with golden reflections ; venter densely hairy.

Legs blackish-brown with dull violet reflections ; femora pale creamy at the base and below, fore femora spinose and all the tibiae, especially of the hind legs ; fore unguis unequal, the larger biserrate, the smaller simple.

Wings with short fork-cells ; the first a little longer and narrower than the second, its base nearer the apex of the wing, its stem longer than the cell, stem of the second fork-cell longer than the cell ; mid cross-vein longer than the supernumerary, posterior as long as the mid, curved, about half its own length distant from it ; the 2nd to 6th veins with only a single row of median vein scales, no lateral scales.

Genitalia with small narrow basal lobes ; claspers as long as the lobes, simple with a dark terminal spine.

*Length.*—5 mm.

♀. Head very similar to the ♂, but the scales not quite so pale and the few scanty dark fork-scales spreading more over the occiput ; three black chaetae only on each side on the ocular line ; proboscis ochreous in the middle, dark at base and apex, with numerous short pale hairs ; palpi about one-fourth the length of the proboscis, brown, with short fine hairs. Antennae brown, pilose.

Thorax black with narrow-curved bronzy black scales ; paler behind, almost ochreous, but dark brown through the bare space before the scutellum, with dull golden curved scales around it and dark ones at the sides, the golden scales broader than the dark ; chaetae long, black in the middle and in front, golden over the roots of the wings ; scutellum ochreous, darker on mid lobe, scales narrow-curved (?) ; six golden-brown posterior border-bristles, three on each side of the mid lobe ; metanotum ochreous dark in the middle ; pleurae bright ochreous with grey sheen and pale hairs, pale golden ones also between the dark mesonotum and pale pleurae.

Abdomen black with violet reflections and basal lateral yellow spots and many yellow scales on the apical segment posterior border-bristles pale golden ; venter pale, dull ochreous.

Legs as in the ♂, but the femora paler, almost ochreous in the hind legs, fore femora spinose and all the tibiae ; unguis equal and simple.

Wings with median vein scales only to most of the veins, if lateral ones of pyriform shape ; fork-cells small, the first about the same length as the second and narrower, its base near the apex of the wing, its stem a little longer than the cell ; stem

of the second about the same length as the cell; mid cross-vein longer than the supernumerary, posterior about the same length as the mid, not quite its own length distant from it.

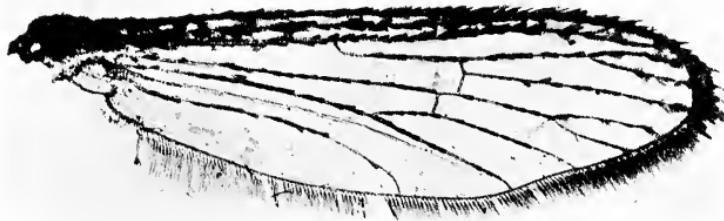


Fig. 113.

Wing of *Hispidomyia hispida*. ♀. n. sp.

*Length*.—4·5 mm.

*Habitat*.—Near Gebel Ahmed Aga and Bor, Sudan (Harold King).

*Time of capture*.—2. and 20. v. and 20. vi. 09.

*Observations*.—Described from two ♂'s and one ♀ taken and bred by Mr. Harold King, the one ♂ from a khor between Gebel Ahmed Aga was bred from a pupa with very long siphons. The second ♂ was taken on the boat between Bor and Mongalla. The ♀ was captured at Bor. Mr. King noted that the dark scales on the abdomen and the palpi have a purplish sheen. The latter specimen was paler than the first and was dissected. It is a very marked insect, the only one I have seen present such marked palpal, proboscis and wing structure, and hence have placed it in a new genus, as it does not approach any known Culicid. The female described here was thought by King to belong to the two males and answers in all general characters.

#### GENUS LEPIDOTOMYIA. Theobald (1905).\*

Gen. Ins. Fam. Culicid. 22 (1905), Theobald; Mono. Culicid. IV., 249 (1907), Theobald.

One species only described.

\* This is not the *Lepidotomyia*, Theob., in the *Annales Musei Nationalis Hungarici*, III., 1905, pp. 61-120. The generic name used there was an error for *Reedomyia*.

**LEPIDOTOMYIA MAGNA.** Theobald (1905).

Gen. Ins. Fam. Culicid. 22 (1905).

Bombay.

*Type* in the British Museum.

**GENUS GNOPHODEOMYIA.** Theobald (1905).

Journ. Eco. Biol. I., No. 1, 21 (1905); Mono. Culicid. IV., 251 (1907),  
Theobald.

A single species only so far known.

**GNOPHODEOMYIA INORNATA.** Theobald (1905).

Journ. Eco. Biol. I., No. 1, 21 (1905); Mono. Culicid. IV., 252 (1907),  
Theobald.

New Amsterdam.

*Type* in the British Museum.

**GENUS PROTOMACLEAYA.** Theobald (1907).

Mono. Culicid. IV., 253 (1907).

Two species occur in this genus.

*a.* Abdomen unbanded, basal lateral white spots.

Legs unbanded.

Thorax rich brown in middle, forming a  
pear-shaped area, sides silvery-grey..... *triseriata*. Say.

*aa.* Abdomen with basal white bands.

Thorax rich brown, with two pale median  
spots and pale scaled lines at sides  
before wing roots ..... *alboventralis*. n. sp.

**PROTOMACLEAYA TRISERIATA.** Say (1822).

*Culex triseriatus.* Say (1822).

*Ochlerotatus triseriatus.* Coquillett.

Journ. Acad. Nat. Sc. Philadel. III., 12 (1822), Say; Mono. Culicid.  
IV., 284 (1907), Theobald.

North America.

## PROTOMACLEAYA ALBOVENTRALIS. nov. sp.

Thorax rich brown, with two paler median spots and paler scaled lines at the sides before the wing roots; pleurae brown with pale spots; palpi and proboscis black. Abdomen black with basal white bands, expanded in the middle, with large basal lateral white spots and white venter (in some lights creamy-white). Legs brown, unbanded.

♀. Head dark brown with rather dense irregular narrow-curved pale scales, which become broader at the sides, almost spindle shaped; numerous dark, upright, forked scales, paler in front and placed all over the occiput, laterally a small patch of flat black scales, then an area of flat creamy ones; a tuft of golden chaetae between the eyes, long brown ones on each side;

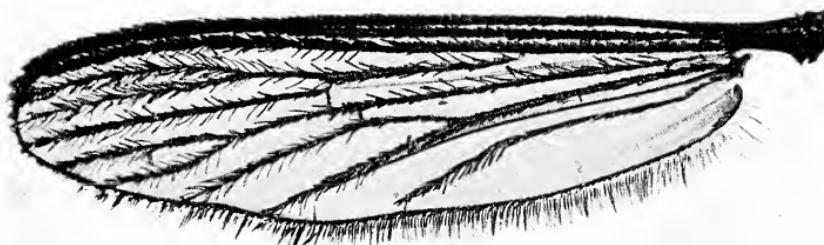


Fig. 114.

Wing of *Protomacleaya alboventralis*. ♀. n. sp.

eyes silvery; clypeus, palpi and proboscis black; antennae deep blackish-brown, except the base of the second segment which is bright testaceous; apparently a few small flat pale scales on the basal segment.

Thorax deep rich brown, clothed with small bright brown curved scales, with patches of rather broader pale scales as follows:—two in front near the head, two further back and wider apart, nearly level with a patch on each side in front below the median ones, and others forming more or less lines before the roots of the wings, and some around the front border, and others behind near the scutellum; scutellum brown, with flat white scales to the middle lobe, rather broad curved ones to the lateral lobes; metanotum black; pleurae dark brown with patches of flat white scales.

Abdomen black, with basal white bands, somewhat swollen

in the middle; border-bristles pale golden; long basal white patches, almost extending the whole length of the segments; venter entirely creamy-white scaled.

Legs uniformly brown, paler at the base and with white apices to the femora; fore and mid unguis equal and uniserrate, hind equal and simple, tips of tibiae paler in some lights.

Wings with brown scales with bronzy reflections; the first fork-cell considerably longer and narrower than the second posterior, its base a little nearer the base of the wing, its stem about half the length of the cell; stem of the second fork-cell not quite as long as the cell; posterior cross-veins not quite as long as the mid, about one and a half times its own length distant; the posterior border-scales with long projecting spines.

*Length.*—5 to 5·5 mm.

*Habitat.*—Bihe, Angola (Dr. Creighton Wellman), and Katema Bihe.

*Time of capture.*—2. 6. ii. and v. 1907.

*Observations.*—Described from five ♀'s.

One ♀ bred out from pupa in front pool, two taken in house at 9 P.M. I have placed it in the genus *Protomacleaya*, as the squamose characters just agree. It is a marked species examined under the microscope, but obscure with the lens. The pale venter, long lateral pale spots and the marked border-scales of the wing are all very characteristic.

*Type* in the British Museum.

### GENUS REEDOMYIA. Ludlow (1905).

Canad. Ent. XXXVII., 94 (1905), Ludlow; Mono. Culicid.

IV., 257 (1907), Theobald.

Eight species are now known in this genus. They tabulate as below:—

a. Tarsi unbanded.

β. Apex of femora only white ..... *pampangensis*. Ludlow.

ββ. Apex of femora not white.

Thorax unadorned.

Abdomen with indistinct basal

grey bands ..... *niveoscutella*. Theobald.

βββ. Legs with white band at apex of femora  
and tibiae.

Apex of abdomen white.

Thorax unadorned ..... *biannulata*. Theobald.

Apex of abdomen not white.

Thorax brown and golden, the former making the prominent patches in front ..... *neobiannulata*. n. sp.

Thorax with two pale spots ..... *bipunctata*. n. sp.

Thorax with four pale spots ..... *alboscutella*. Theobald.

$\alpha\alpha$ . Tarsi banded.

Last hind tarsal white ..... *albopunctata*. Theobald.

Last mid and hind tarsal pale ..... *lowisii*. n. sp.

#### REEDOMYIA PAMPANGENSIS. Ludlow (1905).

Canad. Ent. XXXVII., 94 (1905), Ludlow; Philip. Journ. Sci. I., 9, 990 (1906), Banks; Mono. Culicid. IV., p. 258 (1907), Theobald; Mosq. Philip. Isl. 10 (1908), Ludlow.

Philippine Islands.

#### REEDOMYIA NIVEOSCUTELLA. Theobald (1905).

Journ. Eco. Bio. I., No. 1, 22 (1905), ♀; Mono. Culicid. IV, 289 (1907), Theobald; Mosq. Philip. Isl. 9 (1908), Ludlow.

India.

*Additional locality*.—Philippine Islands (Ludlow).

*Type* in the British Museum.

#### REEDOMYIA BIANNULATA. Theobald (1907).

Mono. Culicid. IV., 263 (1907).



Fig. 115.

Wing of *Reedomyia biannulata*. ♀. Theobald.

Sierra Leone.

*Type* in the British Museum.

Fresh figures are given of this species.



Fig. 116.  
*Reedomyia biannulata.* Theobald.  
♂ genitalia.



Fig. 117.  
*Reedomyia biannulata.*  
Theobald.  
♂ palp.

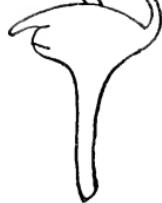


Fig. 118.  
*Reedomyia biannulata.* Theobald.  
♂ clasper.

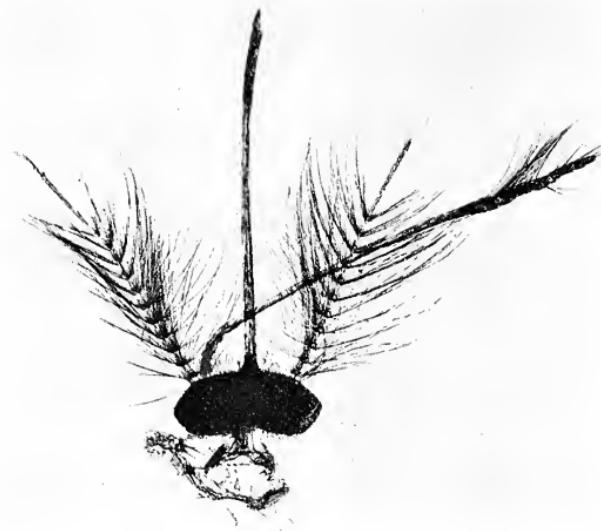


Fig. 119.  
*Reedomyia biannulata.* ♂. Theobald. Head.

## REEDOMYIA NEOBIANNULATA. nov. sp.

Mono. Culicid. IV., p. 263 (1907), ♂ only, Theobald.

Thorax ornamented with brown and golden scales, the former forming two prominent patches in front, edged at the back with golden. Head golden in the middle with black and creamy patches laterally; scutellum silvery-white. Abdomen black with basal white bands. Legs as in former species.

♀. Head brown with golden curved scales and black upright forked scales, then a lateral patch of flat black scales, then a patch of yellow flat ones, then a patch of dusky ones; some stout black chaetae project forwards; palpi, proboscis, and antennae black.

Thorax black, clothed with scanty golden narrow-curved scales, thickest in front, in the middle and behind two depressed darker patches; chaetae black; scutellum as in *R. bipunctata*; metanotum brown.

Abdomen black with basal white bands and pale golden border-bristles; venter black and creamy.

Legs much as in the former, but the hind tibial bands small; and the hind knee spots not prominent; unguis as in *R. bipunctata*.

Wings with a white scaled spot at the base; first fork-cell longer and narrower than the second fork-cell, its stem about half the length of the cell; stem of the second two-thirds the length of the cell; posterior cross-vein about as long as the mid, not quite its own length distant from it.

Length.—3·5 to 4 mm.

♂. Very like ♀, but the abdominal banding is more pronounced. This I have previously described. The male genitalia are just as in the type from Sierra Leone.

*Habitat*.—Accra, Obuasi (type ♀); Katemas, Bihe, Angola, W. Africa (Dr. Creighton Wellman, five ♀'s).

*Time of capture*.—16. 19. and 20. vi. 08, at Accra; 1. 2. 4. and 7. ii. 05, at Bihe.

*Observations*.—Taken by Dr. Graham in latrines. Bred from pupae in forest pool by Dr. Creighton Wellman. It resembles, at first sight, some varieties of the former, but may be told by the different venation in the ♀, by the small white patch at the base of the costa, by the normally banded abdomen and by the very different ♂ genitalia. Some ♀'s show no abdominal banding at all, but I am inclined to think these

are only a variety. The type ( $\delta$ ) was described from Sierra Leone as the  $\delta$  of *R. biannulata*.

Specimens, from Obuasi, were taken in bush path by Dr. Graham, 15. xi. 07; 1. x. 07; 7. and 11. viii. 07.

**REEDOMYIA BIPUNCTATA. nov. sp.**

Thorax brown with two yellow spots on the mesothorax, two small patches in front, and creamy yellow scaled scutellum. Legs unbanded, deep brown, pale on under side of femora, apex of femora with small pale spot, a larger one at apex of hind tibiae, creamy white. Abdomen deep brown, unbanded, with small basal white lateral spots.

♀. Head with dull golden narrow-curved scales at the back, dark ones in front, and golden ones around the eyes, flat, dark

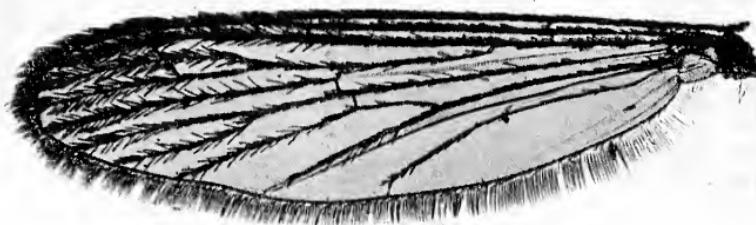


Fig. 120.  
Wing of *Reedomyia bipunctata*. ♀. n. sp.

and then creamy lateral ones, black upright forked scales and black chaetae; clypeus and proboscis and palpi black; antennae lack.

Thorax rich bright brown with small narrow-curved bronzy scales, two pronounced yellow spots of larger curved scales in the middle, a small patch on each side right in front, and a patch in front of the roots of each wing, chaetae dark brown; scutellum with small, flat, pale yellowish scales when looked at with the head to the light, quite dusky when in the reverse direction; pleurae brown with four white spots; metanotum deep brown.

Abdomen deep dusky brown to black, with small white basal lateral spots, and basal white bands to the venter.

Legs deep brown, unbanded, but in the hind legs there is a prominent creamy band at the apex of the tibiae and a smaller one on the mid legs, knee spots creamy; fore and mid unguis

equal and uniserrate, hind equal and simple; venter of femora pale.

Wings with brown scales; first fork-cell a little longer and narrower than the second fork-cell, their bases nearly level, stem of the former less than half the length of the cell; stem of the latter nearly two-thirds the length of the cell; posterior cross-vein barely its own length distant from the mid.

*Length*.—4·5 mm.

*Habitat*.—Obuasi, Ashanti (Dr. Graham).

*Time of capture*.—7. viii. 07; 30. ix. 07; 1 and 2. x. 07; 29. x. 07; 8. xi. 07.

*Observations*.—Caught in bush at 11 A.M. Described from several ♀'s. The two thoracic spots are marked, and the male genitalia are very marked, as shown in the figure. The scutellum is pale in one light, dusky in another.

REEDOMYIA ALBOSCUTELLA. Theobald (1905).

*Lepidotomyia alboscutella*. Theobald (1905).

Ann. Mus. Nat. Hung. III., 80 (1905); Mono. Culicid. IV., 260 (1907),  
Theobald.

New Guinea.

*Type* in the National Museum, Budapest.

REEDOMYIA ALBOPUNCTATA. Theobald (1907).

Mono. Culicid. IV., 262 (1907).

Sierra Leone.

*Type* in the British Museum.

REEDOMYIA LOWISII. nov. sp.

Head brown, with a dark and pale patch on each side; proboscis deep brown, paler in the middle. Thorax rich brown, with traces of six yellow spots; silvery puncta on pleurae; scutellum silvery-white. Abdomen black with narrow basal white bands; venter yellow with apical black bands. Legs deep brown, femora pale beneath and at the base; a silvery-white spot at apices of femora and tibia; narrow yellow basal bands to tarsi, last mid and hind tarsals clay-coloured to pale yellow.

♀. Head deep brown with golden and brown small narrow-curved scales in the middle and long upright deep brown forked scales over that area ; at the sides a patch of flat scales black, then white and then black again ; ocular chaetae thick, black ; palpi small dark scaled, the apices with a silvery sheen ; proboscis deep blackish-brown, paler, of a dull ochreous hue in the middle ; antennae brown ; basal segment black with some small black curved hairs.



Fig. 121.

*Reedomyia lowisii*. ♀. n. sp. Head.

Thorax rich deep brown with narrow-curved bronzy scales and four median spots of dull yellow scales, rather indistinct, and another spot behind on each side in front of the base of the wings ; scutellum brown, clothed with flat silvery-white scales ; pleurae deep brown and brown with three spots of flat silvery-white scales.

Abdomen black with narrow basal white bands and pale golden border-bristles, with traces of silvery-white lateral spots ; venter with dull creamy-yellow scales basally, the apices of the segments dark scaled.

Legs deep brown, base and venter of femora yellowish ;

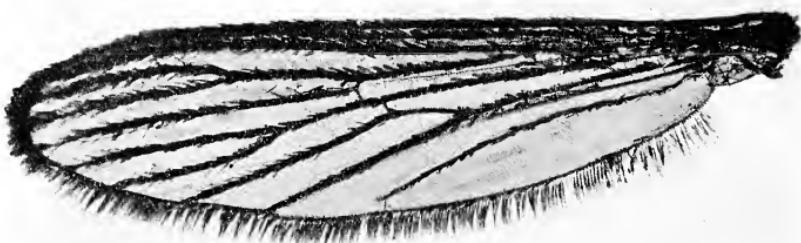


Fig. 122.

Wing of *Reedomyia lowisii*. ♀. n. sp.

apices of all the femora and tibiae with a silvery-white spot ; fore metatarsals and first segments with narrow basal pale

yellowish bands, to some extent spreading on to the apices of the segments; mid legs with apical and basal yellow tarsal banding, last segment yellowish to clay-coloured; in the hind legs the banding the same as the mid; fore and mid unguis equal and uniserrate.

Wings with brown scales, a snow-white spot at the base; first fork-cell longer and narrower than the second fork-cell, its base a little nearer the apex of the wing, its stem not quite as long as the cell, as is also the stem of the second fork-cell; posterior cross-vein twice its own length distant from the mid; halteres with pale stem and fuscous knob.

*Length*.—4 to 4·3 mm.

♂. Palpi longer than the proboscis, brown with ochreous shades, the apical segment shorter than the penultimate, long brown hairs on one side of the two top segments and apex of the antepenultimate, increasing in length from the apex downwards, some hairs on the opposite side of the apical segment. brown.

Thorax, abdomen and legs much as in the ♀. Fore and mid unguis unequal and uniserrate; *hind unequal and simple*.



Fig. 123.

*Reedomyia lowisii*. ♂. n. sp.

Plume hairs of antennae



Fig. 124.

Wing of *Reedomyia lowisii*. ♂. n. sp.

Wings with short fork-cells, the first about the same length and very little narrower than the second, its base nearer the

apex of the wing, its stem longer than the cell; stem of the second as long as the cell; posterior cross-vein sloping back, parallel with the mid, about its own length distant.

*Length.*—4 mm.

*Habitat.*—Andaman Islands (Lowis); and one ♀ (Ray White), 1908, per C. S. Banks; Galle, Ceylon (Bainbrigge Fletcher).

*Time of capture.*—6. iv. 07, in Ceylon.

*Observations.*—Described from three ♀'s and one ♂ from Andaman Islands. It comes near *R. albopunctata*, Theob., but can at once be told by the indistinct yellow thoracic puncta—not silvery as in that species—and by the clay-coloured (not white) last hind tarsal.

The unequal male hind unguis are very noticeable.

*Type* in the British Museum.

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#### GENUS **PECOMYIA.** Theobald (1905).

Journ. Eco. Biol. I., No. 1, 24 (1905); Mono. Culicid. IV., 265 (1907),  
Theobald.

Two species have been described in this genus:—

#### **PECOMYIA MACULATA.** Theobald (1905).

Journ. Eco. Biol. I., No 1, 24 (1905); Mono. Culicid. IV., 266 (1907),  
Theobald.

India.

*Type* in the British Museum.

#### **PECOMYIA CAECA.** Theobald (1901).

*Culex caecus.* Theobald (1901).

Mono. Culicid. I., 413 (1901); IV., 268 (1907), Theobald.

Selangor, Klang Mangrove Swamps, Federated Malay States; Philippine Islands.

*Note.*—This species is tabulated under *Culex*, p. 327.

*Type* in the British Museum.

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GENUS **NEOPECOMYIA.** nov. gen.

Head clothed with narrow-curved scales, upright forked scales, and flat lateral ones; the latter pass further on to the vertex than in *Culex*, and the narrow-curved scales occur along the nape behind these flat scales.

Thorax with narrow-curved scales; scutellum with small flat scales on the lateral lobes and base of the median lobe, the apical portion of the latter with narrow-curved scales; palpi of ♀ short. Wings normal, lateral vein-scales linear, rather broad, and rounded apically.

This genus comes near *Pecomyia* and *Reedomyia*, but differs from both in having the scutellum with all flat scales except a broad apical area on the mid lobe, and a few scattered ones on lateral lobes.

**NEOPECOMYIA UNIANNULATA.** nov. sp.

Thorax brown with scattered golden scales, some pale creamy yellow ones in front and on two spots on the middle of the mesonotum; palpi and proboscis black. Abdomen black unbanded, with basal lateral creamy spots. Legs black, femora grey below, a small white knee spot, a narrow white band to apex of fore and mid tibiae, and a broad snowy-white one to the hind tibiae.

♀. Head brown, clothed in the middle with narrow-curved pale golden scales, brown upright forked scales in front, a tuft of dark ones at the back; the narrow-curved pale golden scales pass downwards along the nape; in front of these expansions is a patch of flat black scales on each side, and then flat creamy scales, the eyes bordered with brighter golden small scales, chaetae bright brown; clypeus brown, broad and square, indented in the middle in front; palpi and proboscis black scaled; antennae brown, basal segment testaceous.

Thorax rich brown, clothed with small narrow-curved brown and golden scales, the latter scattered about, but especially dense and paler in front and on two spots in the middle of the mesonotum, chaetae dark brown; scutellum pale greyish-brown, clothed

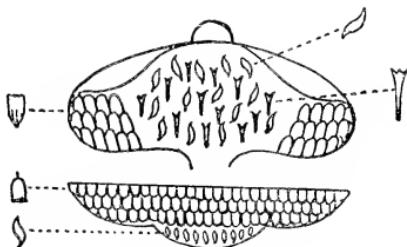


Fig. 125.  
Genus *Neopecomyia*. nov. gen.

with small flat dull white scales on the lateral lobes and base of the median lobe, narrow-curved black scales on the apical half of the mid lobe, and there are a few creamy narrow-curved scales at the sides ; pleurae pale brown, with some patches of dull flat creamy scales ; border-bristles black ; metanotum chestnut-brown.

Abdomen uniformly clothed with black scales, each segment with basal white creamy spots ; border-bristles golden.

Legs black, under side of femora grey, almost white on hind legs, knee spot white, a white dorsal spot on the apex of the fore and mid tibiae, a broad white band on the apex of the hind tibiae, spines on fore and mid legs dark, golden to golden-brown on the hind legs ; fore and mid unguis equal and uniserrate, equal and simple on the hind legs.

Wings with brown scales, rather dense on the apical area, lateral vein scales long and rather broad, rounded apically ; first sub-marginal cell longer and narrower than the second posterior cell, its base very slightly nearer the base of the wing than that of the latter, its stem more than half the length of the cell ; stem of the second posterior also a little more than half the length of the cell ; posterior cross-vein about one and a half times its own length distant from the mid.

*Length.*—5 mm.

*Habitat.*—Kumasi, Ashanti (Dr. Graham).

*Time of capture.*—20. x. 07.

*Observations.*—Described from a single perfect ♀, reared from a larva taken in the hollow of a tree. It is a marked species easily told by the pale scutellum and marked white tibial band.

*Type* in the British Museum.

#### GENUS **TRICHLORHYNCHUS.** Theobald (1905).

Journ. Bomb. Nat. Hist. Soc. XVI., 240 (1905) ; Mono. Culicid.  
IV., 270 (1907), Theobald.

A single species only known.

#### **TRICHLORHYNCHUS FUSCUS.** Theobald (1905).

Journ. Bomb. Nat. Hist. Soc. XVI., 240 (1905) ; Mono. Culicid.  
IV., 270 (1907).

Peradeniya, Ceylon.

*Type* in the British Museum.

## GENUS STENOSCUTUS. nov. gen.

Head clothed with narrow-curved scales over most of the surface, with flat lateral ones and evenly disposed, upright, forked scales; palpi short in ♀. Thorax with narrow-curved scales; scutellum with broad-curved, almost spindle-shaped scales, lateral lobes with flat scales and a few narrow-curved ones.

The scutellar scales in this genus are very marked, narrow ones being on all the lobes, but flat predominate on the lateral lobes.

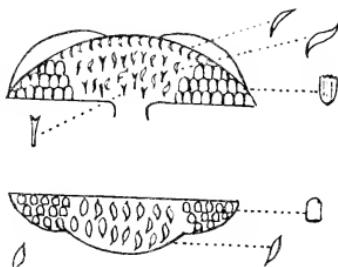


Fig. 126.  
*Stenoscutus*. nov. gen.  
Head and scutellum.

## STENOSCUTUS AFRICANUS. nov. sp.

Head pale with two dark spots and a golden border around the eyes; proboscis and palpi dark brown. Thorax bright chestnut-brown with scattered golden scales; scutellum pale creamy; pleurae pale brown with creamy spots. Abdomen fuscous with pale dull ochreous basal bands. Legs unbandied.

♀. Head brown with rather long, pale, curved scales in the middle, golden curved scales around the eyes, a patch of flat black scales at the sides, then flat dull grey ones, black upright forked scales; palpi black, rather short; proboscis bronzy black; antennae brown, basal segment bright ochraceous.

Thorax bright brown, with narrow-curved pale golden scales, especially in front of the base of the wings; chaetae deep brown with pale bases; scutellum brown, with broad-curved, almost spindle-shaped, creamy scales to the mid lobe, and flat creamy ones to the lateral lobes, with a few narrow-curved ones (when the head is pointed away from the light these scales are all dusky); border-bristles to the mid lobe, five in number; metanotum deep chestnut-brown; pleurae brown with flat creamy scales and many golden-brown chaetae.

Abdomen deep fuscous brown with basal, indistinct, dull ochreous bands and golden and brown border-bristles; the pale bands spread out laterally, but are obscure on the apical segments and are partly due to scanty scaling; venter with broad ochreous bands.

Legs uniformly brown with dull ochreous and bronzy

reflections, and a pale spot at the apex of the hind femora and tibiae; fore and mid unguis equal and uniserrate; chaetae on the femora and metatarsi dark, on the tibiae golden.

Wings with the first fork-cell longer and a little narrower than the second, its base, if anything, a little nearer the apex of the wing, its stem a little less than one-half the length of the



Fig. 127.  
Wing of *Stenoscutus africanus* ♀. n. sp.

cell, stem of the second fork-cell also a little more than one-half the length of the cell; posterior cross-vein about its own length distant from the mid. Halteres dull ochreous.

*Length*.—3·5 mm.

*Habitat*.—Obuasi, Ashanti (Dr. Graham).

*Time of capture*.—11. viii. 07 and 2. x. 07.

*Observations*.—Described from two ♀'s caught in the bush. This species, the only one in the genus, can at once be told by the generic characters of the scutellar scales; the thorax in one shows distinct grouping of the golden scales.

*Type* in the British Museum.

#### GENUS BOYCIA. Newstead (1907).

Anns. Trop. Med. and Parasit. I., No. 1, 33 (1907).

"Head with a median area of narrow-curved scales, flat, loose, lateral ones, and numerous upright forked ones. Thorax and scutellum with narrow-curved scales. Wings with the fork-cells relatively short; anterior forked vein slightly shorter than the first posterior; scales resembling those of *Mimomyia*. Palpi short in the ♀, long and clavate in the ♂. Proboscis swollen at the tip in both sexes. The narrow-curved scales in the mid-region of the head are fewer in the ♀ than in the ♂; and, in the former, the central ones are arranged in two distinct lines,

but are almost completely hidden by the numerous upright forked scales.

This genus is somewhat difficult to place, but agrees best with the group of *Culicinae*, in which the palpi of the males are swollen at the tips."

*BOYCIA MIMOMYIAFORMIS.* Newstead (1907).

Anns. Trop. Med. and Parasit. I., No. 1, 34 (1907).

" Head greyish. Mesothorax grey-brown, with two anterior spots and a broad transverse band opposite the insertion of the wings, black. Abdomen black, with pale narrow basal bands ;

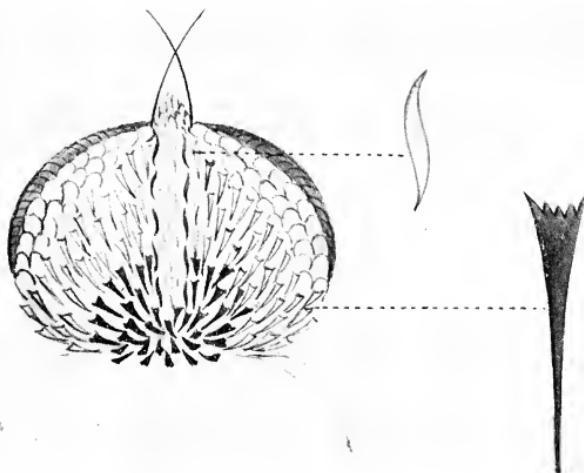


Fig. 128.  
*Boycia mimomyiaformis*. ♀. (After Newstead.)  
Cephalic adornment.

venter ochreous; pleurae pale ochreous. Legs brown; base of femora and tarsi (in certain lights) paler. Proboscis swollen towards the apex.

♀. Central area of head with narrow-curved, creamy-white scales, those in the centre forming the longitudinal series, intermixed with these are numerous creamy, upright forked ones, extending almost to the front of the head; sides with large, loose, spatulate, creamy scales; nape with numerous upright forked, black scales; all the forked scales are broadly dilated with, usually, five well-marked dentations.

Thorax densely clothed with narrow-curved pale golden-yellow scales; two anterior spots and a broad transverse band of black ones; the band faintly constricted in front, giving it, in some specimens, the appearance of two large confluent spots; scutellum with large, narrow-curved, creamy-white scales, those on the lateral lobes with golden reflections; metanotum nude; \* pleurae creamy-yellow.

Abdomen clothed with dark brown and black scales, appearing bronzy-purple in some lights and narrow basal bands of pale

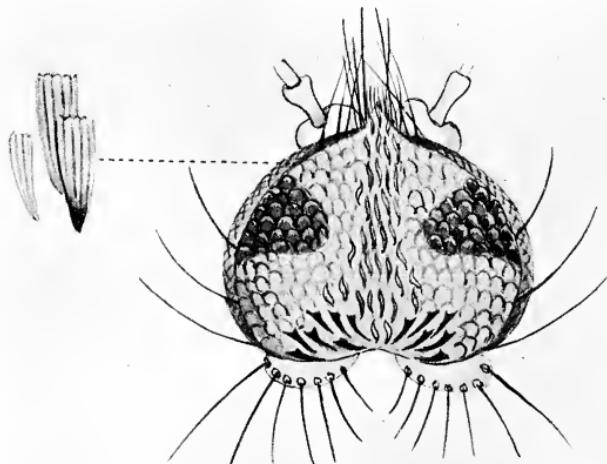


Fig. 129.  
*Boycia minomyiaiformis*. ♂. Newstead.  
Head (after Newstead).

ochreous scales; venter pale ochreous, with lateral, angular, dark brown spots.

Legs unbanded, bronzy-brown, femora pale ochreous-brown at the apices, forming pale knee spots; tibio-tarsal articulations pale; last three segments of tarsi bronzy-ochreous.

*Length.*—2·50 mm.

♂. Head with a well-defined median, long angular patch of narrow-curved creamy scales, no regular series as in the female; sides broadly clothed with large, rather loose, flat, cream-coloured

\* Newstead says two ♀'s show a single curved scale, but these are apparently loose ones from the *metathorax*, an evident misprint for mesothorax.—F. V. T.

scales, and a rather large lateral patch of brown ones; a few short upright forked ones at the nape, black, and a few, very short, creamy ones towards the front of the head.

Antennae densely plumose, hairs grey with a few black ones intermixed. Palpi strongly clavate with a pale cream-coloured band at the anterior end of the first long segment, the remaining portion of the segment and the basal half of the succeeding one with very dark brown, almost black scales; apical segment with short stiff yellow bristles. Proboscis swollen apically, dark brown; labella paler especially at the tips. Mesothorax with the narrow-curved scales dusky-yellow intermixed with grey and a few black ones, and there are two ill-defined lateral black spots in front of the wings. Space between the wings denuded, dark brown; pleurae and legs as in the ♀.

Wings with pale brown scales; anterior forked vein slightly shorter than the first posterior, the latter much the widest, both are relatively short. Abdomen as in the ♀, but the bands are a little more pronounced."

*Habitat*.—Boma, Congo Free State.

*Observations*.—"All the specimens [in the School of Tropical Medicine at Liverpool] were bred from larvae found in a papyrus swamp and among the aquatic plants of a small stream."



Fig. 130.  
*Boycia mimomyiiformis*. ♂. Newstead.  
Palp and proboscis (after Newstead).

#### GENUS **BATHOSOMYIA**. nov. gen.

Head clothed with loose flat scales, except for a few small narrow-curved ones in the middle at the base. Thorax with rather large narrow-curved scales, also the scutellum, palpi of

male longer than the proboscis, the last two segments about equal in length and hairy. Hind unges of the male unequal and uniserrate. Male clasper swollen and with large spines and one large apical curved spine. *First posterior cell almost uniform in breadth.*

Although only the male is known, this presents a very marked genus on account of the squamose characters of the head, the marked first posterior cell, and the peculiar clasps to the male genitalia. As I had only one specimen to dissect, it was not possible to make out the exact detail of one side of the broadly expanded apex of the claspers.

**BATHOSOMYIA ABNORMALIS. nov. sp.**

Head with pale creamy scales; palpi and proboscis brown; antennae flaxen. Thorax brown with pale creamy scales. Abdomen brown with basal creamy bands broadened in the middle. Legs uniformly brown, hind tibiae with pale apex.

♂. Head deep brown, clothed with loosely applied flat pale creamy scales, a few pale narrow-curved ones in the middle near the base; golden chaetae in front, dark ones at the sides; antennae with broad pale bands and narrow dark ones, plume-hairs flaxen-brown; clypeus and proboscis deep brown; palpi deep brown; the two apical segments, of nearly equal length, with scanty brown hairs forming tufts, and a group of long brown hairs at the apex of the antepenultimate segment; palpi longer than the proboscis.

Thorax deep brown, clothed with rather large pale creamy narrow-curved scales and brown chaetae; scutellum ochreous brown with narrow-curved pale creamy scales and four brown border-bristles to the mid lobe; metanotum deep brown; pleurae brown with patches of pale flat scales.

Abdomen brown, clothed with black scales with large basal patches of white scales not quite forming bands, becoming creamy yellow on the sixth and seventh segments, the last all creamy scaled; very long dull golden border-bristles and also lateral ones.

Legs brown unbanded, the hind tibiae with yellow apical



Fig. 131.

*Bathosomyia abnormalis.*

Theobald.

♂ clasper.

spots; fore and mid unguis unequal, uniserrate; hind comparatively large, unequal, simple.

Wings with the first fork-cell longer and narrower than the second, its base nearer the base of the wing, its stem more than half the length of the cell; stem of the second posterior cell as long as the cell; posterior cross-vein not as long as the mid and not quite its own length distant from it; the mid is much longer than the supernumerary. Clasper of genitalia very marked, broadly expanded apically with several large spines and one large curved broad spine at the apex.

*Length.*—3·8 mm.

*Habitat.*—Obuasi, Ashanti (Dr. Graham).

*Time of capture.*—7. viii. 07, and 1. x. 07.

*Observations.*—Caught in bush at 10 A.M. Described from two ♂'s. The genitalia are very peculiar, and the general pale scaled head and thorax, and the large pale basal abdominal patches should at once separate it.

*Type* in the British Museum.

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**GENUS GILESIA.** Theobald (1903).

Mono. Culicid. III., 233 (1903).

A single species only described.

**GILESIA ACULEATA.** Theobald (1903).

Mono. Culicid. III., 233 (1903).

South Queensland.

*Type* in the British Museum.

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**GENUS TRICHORYNCHUS.** Theobald (1905).

Journ. Bomb. Nat. Hist. Soc. XVI., 240 (1905); Mono. Culicid. IV., 270 (1907), Theobald.

A single species only so far recorded. ♀ only known.

**TRICHORHYNCHUS FUSCUS.** Theobald (1905).

Journ. Bomb. Nat. Hist. Soc. XVI., 240 (1905); Mono. Culicid. IV., 270 (1907), Theobald.

Peradeniya, Ceylon.

*Type* in the British Museum.

GENUS **PSEUDOTHEOBALDIA.** Theobald (1907).

Mono. Culicid. IV., 271 (1907); Record Ind. Mus. II., Pt. III., No. 30, 297 (1908), Theobald.

A single species only so far recorded.

**PSEUDOTHEOBALDIA NIVEITAENIATA.** Theobald (1907).

Mono. Culicid. IV., 272 (1907), ♂.

Dehra Dhun, India.

*Additional locality.*—Theob. 8000 feet, Simla Hills (N. Annandale); 2. v. 07.

*Observations.*—A second perfect ♀ in the Indian Museum, Calcutta.

*Type* in the British Museum.

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GENUS **MAILLOTIA.** Theobald (1907).

Mono. Culicid. IV., 274 (1907).

A single species only so far described in this genus, but I fancy I have two more which are quite distinct.

**MAILLOTIA PILIFERA.** Theobald (1907).

Mono. Culicid. IV., 274 (1907).

Algeria.

*Type* in the British Museum.

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GENUS **THEOBALDIA.** Neveu-Lemaire (1902).**THEOBALDINELLA.** Blanchard (1905).

Compt. Rendus. d. Séances d. la Soc. d. Biol. (1902); Mono. Culicid. III., 148 (1903); IV., 275 (1907), Theobald.

Six species are now described in this genus. They tabulate as below:—

I. Wings spotted.

α. Legs basally banded.

β. Wing spots indistinct.

1. Fork-cells long; no white

median line<sub>4</sub> on second  
abdominal segment ..... *ficalbii*. Noë.

$\beta\beta$ . Wing spots distinct.

Dark brown.

2. Fork-cells short; a white median line on second abdominal segment ..... *annulata*. Schrank.
  3. Palpi of ♂ more filiform ... *penetrans*. Desvoidy.
- Pale yellow-brown.
4. Thorax with white scaled lines. Legs with spots on femora and tibiæ ..... *spathipalpis*. Rondani.
  5. Similar to 2, but legs with narrow ochreous basal bands. Thorax with white curved scales ..... *alaskaensis*. Ludlow.

$\beta\beta\beta$ . Wings spotted with large spots and a pellucid area across bases of fork-cells. Legs narrowly basally banded..... *incidens*. Thomson.

$\alpha\alpha$ . Legs unbanded..... *glaphyropterus*. Schiner.

#### THEOBALDIA FICALBII. Noè (1899).

*Culex ficalbii*. Noè (1899).

Bull. d. Soc. Ent. Italiana, XXXI., 231 (1899), Noè; Mono. Culicid. I., 335 (1901), Theobald.

Italy.

#### THEOBALDIA ANNULATA. Schrank (1776).

*Culex annulatus*. Schrank (1776).

*Culex variegatus*. Schrank (1781).

*Culex affinis*. Stephens (1825).

*Theobaldinella annulata*. Blanchard (1905).

Beitr. zur. Naturgesch, 97, 70 (1776), Schrank; Mono. Culicid. I., 331 (1901); III., 148 (1903); and IV., 277 (1907), Theobald.

Hungary; Switzerland; France; Norway; Germany; Austria; Italy; Britain; common throughout Europe from Scandinavia to Italy; Punjab, India; Mexico; United States, California.

*Additional localities*.—S. Fiel, Portugal, 2 ♀'s (F. V. T.); Fevammor, Holland, 1 ♀ and 1 ♂, viii. 1900, in Amsterdam Museum; Bourgas, etc., Bulgaria.

*Observations.*—The following notes have been sent by Mr. Burton from Shrewsbury :—

Jan.	11, 1909.	♀	Biting indoors.
Jan.	13, 1909.	♀	On windows.
March	4, 1909.	♀	Biting in conservatory.
March	18, 1909.	♀	Sheltering in latrine.
March	20, 1909.	3 ♀'s	On windows trying to get out.
March	21, 1909.	♀	Biting in conservatory.
March	28, 1907.	♀	Biting in bright sunlit withy bed.
March	29, 1909.	♀	Biting in bedroom.
March	29, 1909.	♀	Biting in conservatory.
April	15, 1909.	♀	Biting by quarry, 11.30 a.m.
May	18, 1909.	♀	Sheltering in latrine.
May	19, 1909.	♀	Two biting, one depositing eggs, quarry pit.
May	31, 1909.	♀	Caught one full of eggs.
June	23, 1909.	♀	By brickkiln pit.
July	22, 1908.	♂	Sheltering in building.
Aug.	3, 1908.	♀	Biting.
Aug.	25, 1909.	♂	Sheltering in latrine.
Aug.	30, 1909.	♂	In wood by house, drain exit.
Oct.	2, 1909.	♀	Biting cows, 5.30 p.m.
Oct.	15, 1909.	♀	Biting by study fire.
Oct.	16, 1909.	1 ♂ 1 ♀	Box bush near hydraulic ram house.
Oct.	29, 1909.	1 ♂ 1 ♀	On study window.
Oct.	31, 1908.	♀	Biting heifers by river.
Nov.	14, 1908.	♂ ♀	About on windows.
Nov.	16, 1908.	♂ ♀	About.
Nov.	17, 1908.	3 ♂	On study window.
Nov.	18, 1908.	♂	Sheltering in latrine.
Nov.	25, 1908.	♂	Sheltering in latrine.
Nov.	28, 1908.	♀	Biting by study fire.
Nov.	30, 1908.	♀	Biting by study fire.
Dec.	16, 1908.	♂	Caught one.
Dec.	21, 1908.	♂	Caught one.

Have never seen ♂ swarming yet. Have not seen more than one trying to bite at one time. Have caught one ♀ infested with larval trombiculidium.

#### THEOBALDIA PENETRANS. R. Desvoidy (1827).

*Culex penetrans.* R. Desvoidy (1827).

Essai sur les Culic. Mém. de la Soc. Nat. Hist. de Paris (1827), R. Desvoidy ; Mono. Culicid. I., 348 (1901), Theobald.

France.

**THEOBALDIA SPATHIPALPIS.** Rondani (1872).

*Culex spathipalpis.* Rondani (1872).

*Theobaldinella spathipalpis.* Rondani (1872).\*

*Culex longiareolatus.* Macquart (1838) (?).

Bull. d. Soc. Ent. Ital. IV., 31, 12 (1872), Rondani; Dipt. Ital. Prodri. I., (1886); Mono. Culicid. I., 339 (1901), Theobald; ibid. III., 154 (1903); ibid. IV., 276 (1907), Theobald; First Rep. Wellc. Res. Labs. 73 (1904), Theobald; Second Rep. ibid., 71 (1906), Theobald; Third Rep. ibid., 255 (1908), Theobald; Entomo. 107 (1908), Theobald; Dipt. Exot. I., 84 (1888), Macquart (?).

Italy; Gibraltar; Crete; Cyprus; Algeria; Teneriffe; Madeira and St. Michael; Cairo; Khartoum.

*Additional localities.*—Transvaal (Simpson); Malaga, Spain, 2 ♂, 1 ♀ (Univ. Edinburgh); Lausanne, Switzerland (Vallieries); Erkowit, Sudan (King); Rosebank, Cape Colony, 7 and 13. x. 05 (C. Lounsbury).

*Observations.*—Owing to this species being very common in Madeira I feel almost certain Macquart's species, *longiareolatus*, is the same. If so Rondani's name will sink as a synonym.

The Cape specimens were bred from larvae found in a macerating tub.

**THEOBALDIA ALASKAENSIS.** Ludlow (1906).

Canad. Entom. XXXVIII., 326 (1906), Ludlow.

"Head dark brown, covered with white curved scales, and dark brown forked scales on the occiput, with flat white scales on the sides, and extending down under the labium; a few brown bristles around and between the eyes; antennae dark brown, heavy white pubescence and sparse brown verticels, first and second joints with some white flat scales, basal joint testaceous, with a few white flat scales on the median side; palpi dark brown, sparsely covered with white flat scales and a few hairs; proboscis yellowish from base about two-thirds of its length, the apical third dark brown, the whole sparsely covered with thin white flat scales; the effect of the proboscis under the hand-lens is not, however, of a band, the proximal part being merely

\* The generic name was altered by Blanchard to *Theobaldinella*, but Neveu-Lemaire's name, *Theobaldia*, is correct.

of golden-brown tinge, and the distal part darker; clypeus brown; eyes dark blue-green.

Thorax dark brown; prothoracic lobes with a few white curved scales; mesonotum sparsely clothed with rather large white curved scales, and some brown bristles, which do not, however, form any ornamentation except for two tiny faint white sub-median spots nearly midway of the mesothorax, which only show in rather perfect specimens; when denuded there is a suggestion of a dark median line; pleura dark brown, with white flat spatulate scales; scutellum dark brown, the white curved scales being grouped distinctly on the lobes, the interlobular part naked; eight long brown marginal bristles on mid and six on the side lobes, a few lighter bristles above; metanotum brown. Abdomen dark brown, with dark brown scales and white bands, mostly basal, but sometimes very slightly apical, and in some specimens develop into very narrow lateral spots, especially on the distal segments; occasional white scales scattered through the brown; second segment with a narrow median line, apical almost wholly white-scaled; apices and sides of segments rather profusely supplied with light-coloured hairs; venter mostly white-scaled. Legs, coxae and trochanters all brown, with white scales; femora dorsally brown, scaled with a sprinkling of white scales, ventrally white, a small light apical spot, but no ring as in *annulata*; tibiae and metatarsi also brown sprinkled with white, with small light apices; first and second tarsal joints in all the legs with narrow basal light (ochraceous) spots not always amounting to bands; remainder of tarsi brown, except on the hind legs, where sometimes the base of third and fourth joints have a few white scales, not noticeable with a hand lens; unguis large, simple and equal. Wings brown; costa, sub-costa and first long veins heavily scaled with long truncate scales, mostly brown, but sprinkled with a few white scales; these are also found on the stem of the fifth; the second, third, fourth and sixth veins clothed with long, slender brown scales; lateral scales narrowly lanceolate, median truncate but slender, aggregated so as to form four small but distinct spots, occurring at the root of the second, the bases of the fork-cells, and at junction of cross-veins; first sub-marginal cell about one-third longer and a trifle narrower than second posterior, both stems about one-half the length of the latter; cross-veins nearly of one length, and almost in a line; ventral scales long and slender; halteres, light stem, dark knobs.

♂. Much as female; antennae give banded appearance; verticels light brown; palpi as long or longer than proboscis, dark brown, with a light band at base of apical joint, plumes brown except at the light band, where they are yellowish; very marked contraction at the distal end of the second abdominal segment, giving a 'wasp waist' effect; legs as in female, but the bands distinct and fairly wide, especially on the hind legs, where there is a narrow band on the third tarsal; in the fore and mid legs this joint has only a suggestion of a band; fourth joint brown; unguis large, unequal in fore and mid legs, the larger biserrate and the smaller uniserrate, in hind legs large, simple and equal.

*Length*.—10–11 mm.

*Habitat*.—Fort Egbert, Alaska. Taken May–June.

*Type*.—No. 9959, U.S.N.M.

Described from five ♀'s and one ♂ sent by 1st Lieut. J. R. Bosley, Asst. Surg. U.S. Army, in two collections from Fort Egbert, Alaska.

It is closely related to both *annulata*, Shrank, *Ficalbii*, Noé, and *penetrans*, Desvoidy. Differs from the former in that it has only the tiny spot on the thorax; there is no band on the female palpus, and only one on the male; there is no ring on the femur, and the leg bands are much narrower and ochraceous rather than white.

It differs from *Falbici* also in the thoracic markings; the palpi have only white scales; the median stripe on the second abdominal segment; the tarsal bands are basal only, and the mid unguis of the male have only one tooth on the smaller. It apparently reverses the colouring of *penetrans*, and has only four 'maculis plus minusve distinctis.'

It is possibly not out of place to state here that the specimens from San Francisco, Cal., which otherwise agree well with Theobald's description of *T. annulata*, Shrank, lack the mid band on the metatarsi, and that three, and sometimes even four, tarsal joints are minutely banded."

#### THEOBALDIA INCIDENS. Thomson (1868).

*Culex incidens*. Thomson (1868).

*Culex particeps*. Adams (1903).

Eugen. Resa. Dipt., 443 (1868), Thomson; Mono. Culicid. III., 151 (1903); IV., 279 (1907), Theobald.

United States; British Columbia.

THEOBALDIA GLAPHYROPTERA. Schiner (1864).

*Culex glaphyropterus.* Schiner (1864).

Fauna. Austr. Die Fliegen. II., 628, 10 (1864), Schiner; Mono. Culicid. I., 347, 1 (1901), Theobald.

Austria.

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GENUS **PARDOMYIA.** Theobald (1907).

Mono. Culicid. IV., 280 (1901).

A single species, only quite distinct from any known Culicid, has been described.\*

**PARDOMYIA AURANTIA.** Theobald (1907).

Mono. Culicid. IV., 280 (1907).

Sarawak (Kuching).

*Additional locality.*—Kuala Lumpur, Malay States.

*Type* in the British Museum.

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GENUS **MEGACULEX.** Theobald (1907).

Mono. Culicid. IV., 282 (1907).

A single species so far described.†

**MEGACULEX ALBITARSIS.** Theobald (1901).

*Culex albitoris.* Theobald (1901) non Neveu-Lemaire (1902).

Mono. Culicid. II., 25 (1901); III., 186 (1903); IV., 283 (1907).

Bondy, West Africa; Congo Free State.

*Type* in the British Museum.

\* Miss Ludlow sends the description of a second species which I have included in the appendix.

† Dr. Graham has recently shown me a new species of this genus from W. Africa. Much smaller than the type species. (*Vide Addenda.*)

GENUS **GRABHAMIA**. Theobald (1903).*FELTIDIA*. Dyar (1905).

Mono. Culicid. III., 243 (1903); IV., 284 (1907), Theobald.

Twenty-eight species have been described in this genus.

## GRABHAMIA PULCRITARSIS. Rondani (1872).

*Culex pulcritarsis*. Rondani (1872).*Culex leucacanthus*. Loew (1873).

Bull. Soc. Ent. Ital. IV., 81, 8 (1872), Rondani; Mono. Culicid. II., 12 (1901); IV., 301 (1907), Theobald.

Italy; Hungary.

## GRABHAMIA PULCRIPALPIS. Rondani (1872).

*Culex pulcripalpis*. Rondani (1872).

Specie. Ital. d. Gen. Culex. Boll. Soc. Ent. Ital. (1872), Rondani; Mono. Culicid. II., 13 (1901), Theobald.

Italy; England.

*Additional locality*.—Egypt, two ♀'s on board ship at night, Suez Canal, 9. x. 07. Rather small specimens in Indian Museum, Calcutta.

## GRABHAMIA PENICILLARIS. Rondani (1872).

*Culex penicillaris*. Rondani (1872).

Bull. d. Soc. Ent. Ital. IV., 81 (1872), Rondani; Mono. Culicid. II., 19 (1901), Theobald.

Italy.

## GRABHAMIA DORSALIS. Meigen (1818).

*Culex dorsalis*. Meigen (1818).

Syst. Beschr. IV., 242, 18, 2, 3, Meigen (1818); Mono. Culicid. II., 16 (1901); III., 251 (1903), Theobald.

Holland; Austria; Berlin; Scandinavia; England.

*Additional localities*.—Karatepe, and in fishing-huts, Bulgaria (Bourgas). 17. vi. and 29. viii. 08 wild; Hungary.

**GRABHAMIA SUBTILIS.** Ed. and Et. Sergent (1905).

Bull. d. Mus. d'Hist. Natur., No. 4, 240 (1905), Sergent; Mono. Culicid. IV., 294 (1907), Theobald.

Algeria.

**GRABHAMIA WILLCOCKSII.** Theobald (1907).

Mono. Culicid. IV., 296 (1907).

Kafr el Dawar, Egypt.

*Type* in the British Museum.

**GRABHAMIA SOLLICITANS.** Walker (1856).

*Culex sollicitans.* Walker (1856).

Ins. Saund., 427 (1856), Walker; Mono. Culicid. I., 368 (1901); III., 247 (1903); IV., 291 (1907), Theobald.

United States; Jamaica; Tamsui, Formosa.

**GRABHAMIA MEDIOLINEATA.** Ludlow (1907) ♀.

Canad. Entomo. XXXIX., p. 129, April (1907).

"Head dark brown or black, covered with long, curved, pale almost white scales, a few ochraceous ones; bright brown flat lateral, and slender white forked scales on the occiput, some brown bristles between the eyes and around the eyes; antennae dark brown, verticels dark brown, pubescence white, first joint testaceous, and in some lights all the joints are apparently light banded, basal joint testaceous, with slender flat white scales at the tip, and occasionally at the base of penultimate joint; proboscis black and quite long, tip black, clypeus black, eyes black and silver.

Thorax black, prothoracic lobes with long pale ochraceous curved scales (spatulate?); mesonotum covered on the median third with bright brown slender curved scales for about two-thirds its length, the caudal third with slender pale curved scales; immediately lateral of this median stripe is a broad pale stripe of rather broader curved scales, and exterior to this another stripe of brown curved scales extending to the wing joint; scutellum black, covered with long slender curved scales; pleura black, with long white spatulate scales; metanotum black.

Abdomen black, covered with black and white or dirty-white scales, so arranged as to make a slender median light line, transverse white bands mostly basal, but involving both segments, and on the more caudal segments are almost entirely apical, the distal segments being in some cases mostly white; white lateral spots, which are really extensions of the white scalings of the venter, and on most of the segments extend the whole length.

Legs—coxae and trochanters light, and white scaled; femora white ventrally, speckled black and white dorsally, a narrow black ring just proximal to the tiny white knee spot; fore and mid tibiae white ventrally (on the hind legs this is reduced to a white line), speckled dorsally, a little darker near the apex, but the apex light, and in the hind legs there is a distinct dark band and light apex as on the femora; metatarsi speckled, those of the fore legs having light apices. On the fore legs the first tarsal joints are black, with basal light bands, all the other joints dark; on the mid leg the first and second joints are still a little speckled, and have white basal bands and tiny white apical spots, sometimes unbanded, third and fourth joints dark; on the hind legs the first and second joints are dark (black), with basal and apical light bands, the third has a basal light band, and the fourth is light; all unguis equal and uniserrate.

Wings clear, speckled with black and white scales, the costa being mostly black, and the sixth long vein white; first submarginal a little longer and more narrow than the second posterior cell, the petiole in each case about half as long as the cell, mid cross-vein twice as long as the 'supernumerary' and equal to the posterior cross-vein, which is about its own length distant; halteres, light stem and dark knobs.

The leg band involves both sides of most of the joints, and in this greatly resembles *G. curriei*, the thoracic marking suggest *G. latiriatta*, but the abdominal marking is clear, in some cases being only clean cut lines, in others a little ragged. The types do not, however, suggest either species more than to indicate their close relationship, having a peculiarly tidy appearance which the others lack.

*Length*.—7·5 mm.

*Habitat*.—Fort Lincoln, N.D., U.S.A. Taken June, July, August."

**GRABHAMIA LONGISQUAMA.** Theobald (1905).

Ann. Mus. Nat. Hung. III., 102 (1905); Mono. Culicid. IV., 503 (1907).

Sousse, Tunis.

*Type* in the National Museum, Budapest.

**GRABHAMIA OCHRACEA.** Theobald (1905).

Journ. Econ. Biol. I., No. 1, 35 (1905); Mono. Culicid. IV., 300 (1907).

India.

*Type* in the British Museum.

**GRABHAMIA TAENIAROSTRIS.** Theobald (1907).

Mono. Culicid. IV., 299 (1907).

Peradeniya, Ceylon.

*Type* in the British Museum.

**GRABHAMIA MARIAE.** Sergent (1903).

*Culex mariae.* Sergent (1903).

Thèse de Paris, 64 (1903), Ed. Sergent; Ann. d. l'Inst. Pasteur, 62 (1903),  
Ed. & Et. Sergent.

Algeria.

**GRABHAMIA CURRIEI.** Coquillett (1902).

Canad. Entomo. 259 (1902), Coquillett; Mono. Culicid. III., 249 (1903),  
Theobald.

N. Dakota ; Colorado ; Boire, Idaho ; Palo Alto, California.

*Additional localities.*—British Columbia (Dyar), rare; Benisca Barracks, California ; Fort Duchesne, Utah ; Montana ; Washington.

**CULEX (GRABHAMIA ?) LATIVITTATUS.** Coquillett (1906).

Ent. News, 109, April (1906).

Similar to *Curriei*, but differs in the stripe of brown scales in the middle of the mesonotum.

This species has a very broad stripe, covering more than one-fifth the width of the mesonotum, borders almost parallel and well marked. In *Curriei* the stripe is narrower (less than one-fifth), borders not well defined, with a narrow line of brown

scales on each side of it, but separated by a stripe of yellowish-white scales.

*Habitat*.—Santa Clara and Alameda Counties, California, U.S.A.

*Note*.—This is evidently a *Grabhamia*.

**GRABHAMIA JAMAICENSIS.** Theobald (1901).

*Culex jamaicensis.* Theobald (1901).

*Culex confinis.* Coquillett (non Arribalzaga).

Mono. Culicid. I., 345 (1901); III., 244 (1903); IV., 286 (1907).

Jamaica; United States.

*Type* in the British Museum.

**GRABHAMIA PYGMAEA.** Theobald (1903).

*Culex nanus.* Coquillett (1903).

*Taeniorhynchus antiquae.* Giles (1904).

Mono. Culicid. III., 245 (1903); IV., 289 (1907), Theobald.

Antigua, Jamaica, Florida.

*Type* in the British Museum.

**GRABHAMIA DURBANENSIS.** Theobald (1903).

Mono. Culicid. III., 246 (1903).

Durban.

*Type* in the British Museum.

**GRABHAMIA FLAVIFRONS.** Skuse (1889).

*Culex flavifrons.* Skuse (1889).

Proc. Linn. Soc. N.S. Wales, III., 1735 (1889), Skuse; Mono. Culicid. I., 421 (1901); IV., 304 (1907), Theobald.

Brisbane, Blue Mountains, N. S. Wales; S. Queensland.

*Type* in the Museum, Sydney, N. S. Wales.

**GRABHAMIA NIGERIENSIS.** nov. sp.

Head brown; proboscis brown, black at the apex, speckled, palpi dark, white at apex. Thorax rich brown, with two broad indistinct parallel golden scaled lines in front, a creamy spot on each side in front and one on each side nearer the middle behind,

irregularly disposed pale golden scales over the roots of the wings and running back from the median spots. Abdomen dusky black, with narrow snowy-white basal bands. Legs mottled, with basal white bands. Wings mottled with brown and creamy scales.

♀. Head black, with large irregular narrow-curved pale scales at the sides of occiput, small dull golden ones becoming bright golden in front in middle region, these all projecting forwards and very narrow; laterally flat black, then dull creamy, then dusky black, and then white flat scales, the last area of black surrounded behind with dull creamy scales; upright forked scales brown and black; chaetae brown, brighter

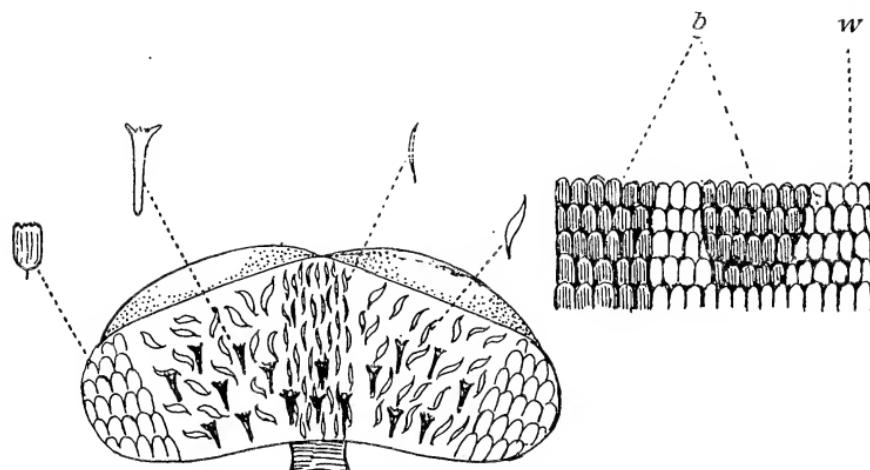


Fig. 132.

*Grabhamia nigeriensis*. ♀. n. sp.  
Head of ♀ and lateral adornment of head. *w*, white; *b*, black.

at their apices. Palpi short, clavate, black scaled, with a few scattered creamy ones and most of the apex white scaled, some long black chaetae. Clypeus nude, black, with a transverse ridge and a swelling on each side at the base.

Proboscis dull yellow scaled in middle, black towards the apex and base. Antennae dark brown; basal segment black except for a patch externally which is testaceous; with small flat scattered white scales; second segment pale testaceous with some small flat white scales; hairs brown.

Thorax black, covered with rich brown narrow-curved scales and ornamented with pale golden and almost white scales as follows:—two broad indistinct parallel lines of pale golden scales in front separated by the rich brown ones; a creamy

almost white spot on each side in front, another on each side in the middle area, nearer the centre of thorax ; two still further back on each side ; some similar scales over the roots of the wings and on each side of the bare space before the scutellum (in some lights all these areas are almost white) ; there are also two creamy scaled spots between the paler second and third ones and some scattered creamy scales ; many pale scales just before the scutellum ; chaetae golden-brown, especially dense over the roots of the wings ; scutellum brown, pale, with narrow-curved irregular pale creamy-white scales, forming noticeable tufts on the lateral lobes which are large ; posterior border-bristles golden-brown, darker at their bases ; metanotum chestnut-brown ; pleurae deep brown with patches of flat white scales and pallid bristles.

Abdomen steely black clothed with dusky black scales and



Fig. 133.  
Wing of *Grabhamia nigeriensis*. ♀. n. sp.

with narrow basal bands of pure white ; posterior border-bristles pale ; basal segment with two basal white spots and long dense pale hairs arising from them, smaller ones from the middle of the posterior border ; venter black with many scattered white scales.

Legs with femora and tibiae black with scattered creamy scales, a tuft of creamy scales and brown chaetae at their apices ; fore metatarsi and first and second tarsals with a creamy basal band, a trace on the third ; mid legs the same but a distinct band on the third and a trace on the fourth ; hind legs with the pale bands much broader. Fore and mid unguis equal and uniserrate ; hind equal and simple.

Wings with brown scales and, some scattered creamy ones, especially on the third long vein ; first fork cell longer and

narrower than the second, its stem about half the length of the cell, its base level with that of the second fork-cell, stem of the second fork-cell nearly as long as the cell; posterior cross-vein more than its own length distant from the mid, base of wings creamy.

Halteres with yellow stems, and fuscous knobs clothed with pale creamy scales.

*Length.*—4·5 mm.

*Habitat.*—Katagum, N. Nigeria (J. M. Dalziel).

*Time of capture.*—20. viii. 07; 26. ix. 07.

*Observations.*—Described from three ♀'s. A very marked species, easily told by the brilliant white abdominal bands, banded and speckled legs and wings.

The cephalic ornamentation with the peculiar scale arrangement separates it at once from any other *Grabhamia*. One specimen shows the base of the first fork-cell slightly nearer the base of the wing than the second.

*Type* in the British Museum.

#### **GRABHAMIA VITTATA.** Theobald (1903).

Canad. Entomo. 313, Nov. (1903); Mono. Culicid. IV., 306 (1907), Theobald.

Pecos Cañon, New Mexico.

*Type* in the British Museum.

#### **GRABHAMIA DISCOLOR.** Coquillett (1903).

*Culex discolor.* Coquillett (1903).

Canad. Entomo. XXXV., 256, Sept. (1903), Coquillett; Mono. Culicid. IV., 309 (1907), Theobald.

New Jersey.

*Type* in the U.S. National Museum.

#### **GRABHAMIA OCCELLATA.** nov. sp.

Thorax very dark brown with two prominent black spots and ornamented with grey and brown scales; proboscis black at apex, with scattered dark and light scales on major area; palpi black, pale at apex and in middle. Abdomen black with narrow white basal bands and similar coloured apical lateral spots which may unite; venter mostly pale scaled. Wings with mixed light and dark scales. Legs black with mottled pale scales and white basal tarsal bands.

♀. Head black with narrow-curved pale golden scales in the middle and around the eyes and at sides dark between with numerous black upright forked scales; black chaetae except those projecting between the eyes; proboscis black at apex, with mottled deep brown and dull yellow scales over the major area; palpi short with large white apical bands and narrow median one, rest black; antennae deep blackish-brown to brown, the basal segment bright brown with a few small pale flat scales; clypeus black.

Thorax black with scanty scattered narrow-curved scales, deep brown, golden-brown and greyish-white, the latter predominating, the first forming two round areas in the anterior half looking like two dark eyes; the pale scales predominate at the sides and before the scutellum; the ornamentation irregular, giving a

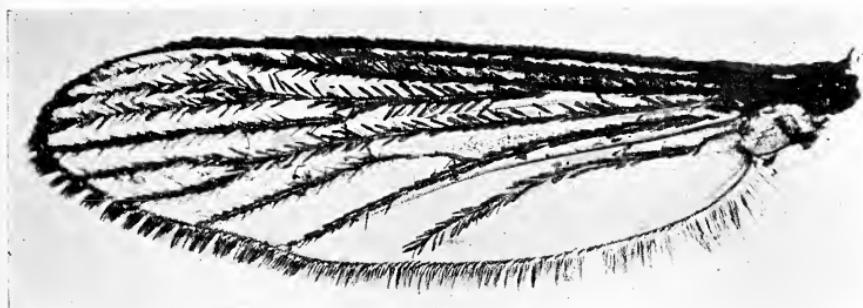


Fig. 134.  
Wing of *Grabhamia ocellata*. ♀. n. sp.

tessellated appearance; chaetae deep brown in front, golden over the wing roots; scutellum brown with narrow-curved white scales at base of mid lobe, pale golden on the posterior area, lateral lobes with pale creamy and almost white scales, some long ones; posterior border-bristles golden and brown; metanotum chestnut-brown with grey sheen and traces of two dark median lines; pleurae black with patches of white scales.

Abdomen black with basal white bands spreading out laterally on some of the segments; apical yellow lateral spots which on some segments meet to form apical yellow bands; basal segment with many white scales with dense and long pale golden and brown hairs; posterior border-bristles brown with pale reflections; venter mostly white scaled.

Legs with femora and tibiae mottled with black and yellow scales, knee spots creamy; metatarsi also slightly mottled; fore

metatarsi faintly banded at basal articulation, first three tarsi with narrow basal white bands, mid the same but banding rather broader; hind with basal white bands on all the tarsal segments; unguis all equal, thick and uniserrate.

Wings with deep brown scales with scattered pale creamy to almost white ones; first fork-cell longer and narrower than the second, its base nearer the base of the wing, its stem about half



Fig. 135.  
Wing of *Grabhamia ocellata*. ♂. n. sp.

the length of the cell, stem of the second fork-cell nearly as long as the cell; posterior cross-vein longer than the mid, sloping backwards, nearly its own length distant from it.

*Length*.—5 to 5·5 mm.

♂. Palpi black with black hair tufts and three white bands, the broadest at the base of the penultimate segment, the smaller bands basal, the apex of the antepenultimate much swollen and also the penultimate segment; antennae banded brown and white, rich brown plume hairs. Abdomen similar to the ♀, but the apical creamy spots are not so pronounced; fore and mid unguis very unequal, both uniserrate; hind equal and simple, longer and straighter than usual. Wings mottled as in ♀ but not so distinctly; first fork-cell very little longer but much narrower than the second posterior, its base nearer the apex of the wing, its stem nearly as long as the cell; stem of the second fork-cell as long as or a little longer than the cell; posterior cross-vein longer than the mid, sloping backwards about two-thirds its own length distant; genitalia very marked, the clasper broad, bluntly truncated, sloping with many fine curved hairs on the apical area and a circlet of long fine hairs curved at their apices and a short blunt spine.

*Length*.—5·5 mm.

*Habitat*.—Lourenco Marques.

brown scaled, proboscis brown, a light band, narrow on the dorsal and wider on the ventral aspect, at the apex of the proximal half; clypeus brown, eyes brown and gold.

Thorax dark brown, prothoracic lobes with slender curved light brown scales, mesonotum with slender curved scales a distinct bare (dark) median line, immediately lateral of which on either side is a broad stripe of bright brown scales, then a light golden-brown or ochraceous stripe extending cephalad from the scutellum to nape, external to these on the caudal half are the darker brown scales, and the lateral portion of the dorsum is covered with the lighter brown scales, scutellum dark, with the light brown or ochraceous scales, and long light bristles on the margin; pleura ashy-brown, with white scales; metanotum dark brown.

Abdomen dark, heavily and closely covered by flat ochraceous scales, two tiny dark submedian points not large enough to call spots, and yet very distinct, on all the segments but the first, which has a large bunch of almost white scales and light hairs, ventrally the abdomen is also covered with ochraceous scales, but not so heavily as dorsally.

Legs: coxae and trochanters mostly light scaled, femora dorsally sprinkled with dark brown and ochraceous scales, darker towards the apex, but the very apex white, ventrad, caudad and cephalad aspects ochraceous. Tibiae much like femora but darker, and on the hind legs have a distinct dark apical band, metatarsi on fore legs much like tibiae, and all the following joints missing, on the mid legs also much like tibiae, tarsal joints dark, the first and second with small ochraceous basal spots, on the hind legs the metatarsi are quite dark but still slightly sprinkled with light scales, and it and all the tarsal joints except the fourth are heavily basally white-banded, the fourth dark, all unguis uniserrate.

Wings clear, mostly dark-scaled, especially near the costa, the sixth long vein mostly dark, first sub-marginal a little longer and about half the width of the second posterior cell, the stem in each case about two-thirds the length of the cell, cross-veins nearly equal in length, the posterior about its own length distant from the mid; halteres mostly light, a little darkened on the knobs.

*Length*.—5–6 mm.

*Habitat*.—Boisé Barracks, Idaho. Taken July.

This evidently lies near *G. Fletcherii*, but the abdominal

*Time of observations.*—Nov. 15, 1909 (Jose F. Sant Anna).

*Observations.*—Described from four ♀'s and three ♂'s. A very marked species told at once by the two dark eye-like



Fig. 136.

*Grabhamia ocellata.* n. sp.

♂ Palp.



Fig. 137.

Male genitalia of *Grabhamia ocellata.* n. sp.

thoracic spots. The genitalia are very marked. It was only found when wind was from the north.

*Type* in the British Museum.

#### GRABHAMIA GRISEA. Ludlow (1907).

Canad. Entomo. XXXIX., p. 130, April (1907).

“Head dark, covered with slender curved scales, light ochraceous on the occiput, a triangular space of darker golden-brown scales just external, and ochraceous flat scales on the sides, no fork scales; antennae brown, verticels brown, pubescence light, basal joint brown, covered with flat ochraceous scales; palpi entirely

marking is distinct, and the specimens of *Fletcherii* which I have seen do not show a marked band on the hind metatarsi, nor a white band on the proboscis."

**GRABHAMIA NIGROMACULIS.** Ludlow (1907). ♀.

Univ. Bull. Geo. Wash. Univ., Jan. (1907).

" Head very dark brown, almost black, covered with ochraceous broad curved scales on the vertex and occiput, a triangular spot of slender golden-brown curved scales immediately laterad, followed by flat, white, then brown, lateral scales toward the ventral surface; white bristles with very slender, long scales projecting forward between the eyes, a heavy bunch of pale forked scales on the nape; antennae dark brown, verticels very dark brown, and sparse, pubescence white, basal joint very dark brown with flat scales; palpi very dark brown; proboscis very dark brown with a tiny white spot (sometimes an indistinct white band) on the apical part of the proximal third of its length, a few white scales at the base, apex dark; eyes dark blue, red iridescence; clypeus very dark.

Thorax almost black; prothoracic lobes covered with long rather slender spatulate white scales and light bristles; mesothorax with a median third of slender curved golden-brown scales, pale on the curved half, and the outer thirds with rather broader pale ochraceous scales; a bunch of pale bristles over the wing joint and a few dark ones near the 'bare space'; scutellum very dark (black) with pale ochraceous slender curved scales and pale bristles; pleura very dark brown with white spindle-shaped and long flat scales, and pale bristles; metanotum very dark brown.

Abdomen very dark, covered with very dark brown, practically black, and pale ochraceous scales, *i.e.*, pale basal and very narrow apical bands, a median ochraceous stripe on most of the segments, white lateral spots and a few pale scales scattered in the dark sub-median spots; the dark spots on the apical segments are much reduced so that these segments are mostly pale scaled. Venter mostly pale scaled.

Legs: coxae and trochanter dark, covered mostly with white scales, a very few dark ones and some dark bristles; femora ventrally light, dorsally speckled nearly evenly black and white, light towards the base, and almost black just proximal to the tiny apical light spot which very slightly includes both sides of

the joint; tibiae much as femora, more distinctly dark towards the apex; metatarsi speckled, darker than the tibiae, and having a basal white band, very narrow in the fore leg; all the tarsal joints are dark, and in the fore and mid legs the first and second tarsal joints have tiny basal white spots; in the hind legs all the tarsal joints are basally white banded, the band on the fourth joint very narrow. Ungues large and equal, both uniserrate.

Wings clear with dark brown and white scales, speckled; the ventral scales all white. First submarginal cell a little longer than, and about half the width of the second posterior cell; mid and supernumerary cross-veins meet and are about equal, posterior cross-vein about the same length as, and its own length distant from it. Halteres with light stem and dark knob.

*Length.*—8-8·5 mm.

*Habitat.*—Fort Keogh, Montana, Fort Lincoln, N.D.

*Taken.*—Fort Keogh, Sept. 1-8, July 12-27."

**GRABHAMIA SPENCERII.** Theobald (1901).

*Culex spencerii.* Theobald (1901).

Mono. Culicid. II., 99 (1901), Theobald; Handbk. of Gnats, 431 (1902), Giles; Mono. Culicid. III., 250 (1903), Theobald; Gens. Ins. Culicid. (1905), Theobald; Philip. Journ. Sci. I., 9, 986 (1906), Banks.

Canada.

*Type* in the British Museum.

**GRABHAMIA MACULOSA.** Theobald (1904).

Ann. Mus. Nat. Hung. III., 105 (1904); Mono. Culicid. IV., 312 (1907), Theobald.

Stax, Tunis.

*Type* in the National Museum, Budapest.

**GRABHAMIA AMBIGUA.** Theobald (1903).

*Grabhamia ambiguus.* Theobald (1903).

Mono. Culicid. III., 248 (1903).

Quilon, India.

*Type* in the British Museum.

**GRABHAMIA FOWLERI.** D'Emm. de Charmoy (1908).

*Culex fowleri.* D'Emm. de Charmoy (1908).

Ann. Trop. Med. and Parasit. II., No. 3, 258, July 1 (1908), D'Emm. de Charmoy; ibid. II., No. 4, 297, Feb. (1909), Theobald.

♀. Proboscis brown, base paler with whitish scales. Palpi black with a few long black hairs; the apex white. Antennae brown, spotted with white, the first segment bearing white scales. Occiput at the sides covered with flat, imbricated, white and black scales; the median portion covered with long, white, narrow curved scales, black, upright forked scales and black hair-like scales.

Thorax brown, with two sub-median greyish lines, with long narrow-curved golden scales and black hair-like scales. Scutellum with white scales and golden hair-like scales.

Abdomen black, with white basal bands. First segment with a basal white dot and apical white line, the other segments with apical white bands; the penultimate one with two apical spots, the last with lateral white spots; the underside of the abdomen with basal and apical bands.

Legs, under-surface of the femora and trochantae of the posterior legs white, the upper surface brown, with small scattered spots; femora of the fore legs with white scales and hairs at their apices. Metatarsi and the first and second segments white at the base; femora and tibiae of the mid legs marked with white at their basal and apical parts. Metatarsi and the first and second segments white at the base. Femora of hind legs white apically. The veins of the wings are covered with brown and white scales. ♂ similar to ♀.

*Habitat.*—Vacoa, Mauritius (D'Emmerez de Charmoy).

*Observations.*—Described as a *Culex*. It is undoubtedly a *Grabhamia*. The author says: "This species is easily distinguished from all other members of the genus *Culex* by the black and white spots on the body of the insect."

No true *Culex* shows the marked squamose wing structure shown in Plate X. of the "Annals of Tropical Medicine and Parasitology," vol. ii., No. 3 (1908). It resembles several other *Grabhamias*, but an examination of the type shows it to be distinct.

*Type* in the collection of the School of Tropical Medicine, University of Liverpool.

GENUS **PSEUDOGRABHAMIA.** Theobald (1905).

Journ. Bombay Nat. Hist. Soc. XVI., 244 (1905); Mono. Culicid. IV., 314 (1907).

A single species only so far described.

GENUS **PSEUDOGRABHAMIA MACULATA.** Theobald (1905).

Journ. Bombay Nat. Hist. Soc. XVI., 244 (1905); Mono. Culicid. IV., 314 (1907), Theobald.

Galgamuwa, Ceylon.

*Additional locality.*—Madras Town, 30. x. 08. 1 ♀ in Indian Museum, Calcutta.

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GENUS **APOROCULEX.** Theobald (1907).

Mono. Culicid. IV., 316 (1907).

## APOROCULEX PUNCTIPES. Theobald (1907).

Mono. Culicid. IV., 316 (1907).

Chinde, British Central Africa.

*Type* in the British Museum.

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GENUS **ACARTOMYIA.** Theobald (1903).

Mono. Culicid. III., 251 (1903).

A single species only so far described.

## ACARTOMYIA ZAMMITII. Theobald (1903).

Mono. Culicid. III., 252 (1903).

Malta.

*Type* in the British Museum (Nat. Hist.).

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GENUS **LUTZIA**. Theobald (1903).

Mono. Culicid. III., 155 (1903), Theobald.

**LUTZIA BIGOTII**. Bellardi (1864).

*Culex bigotii*. Bellardi (1864).

Mem. R. Acad. Torino, Se. 2, T. XXII., 200 (1864), Bellardi; Mono. Culicid. I., 343 (1901); III., 155 (1903), Theobald.

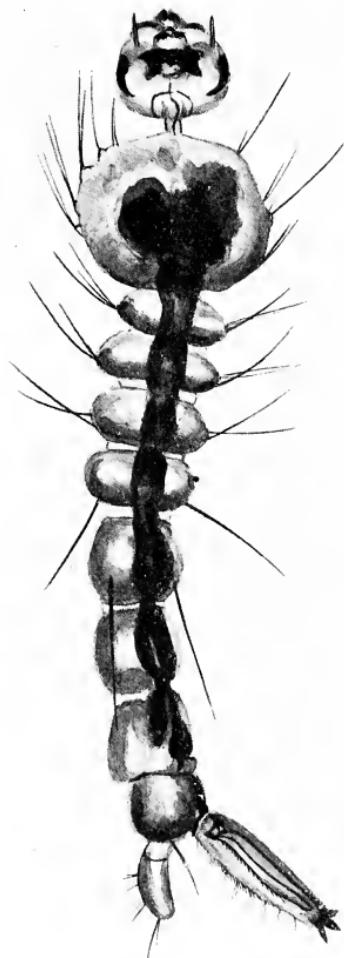


Fig. 138.  
Larva of *Lutzia bigotii*. Theobald  
(after Peryassu).

Mexico ; Rio de Janeiro.

Peryassu figures the larva which is reproduced here.

GENUS **CULICADA.** Felt (1904).

Mosq. or Culicidae, N. York State, 391b, App. (1904), Felt; Mono. Culicid. IV., 318 (1907), Theobald.

Twenty-nine species are described in this genus, and several others still left in *Culex* I think should come here.

The species tabulate as below :—

$\alpha$ . Legs basally banded.

$\beta$ . Abdomen with basal pale bands.

$\gamma$ . Ungues of ♀ all uniserrate.

Thorax golden-brown, with two lateral pale lines most pronounced behind ..... *abfitchii*. Felt.

Thorax golden-yellow and golden-brown scaled, with traces of spots and lines ..... *maculatus*. Meigen.

Thorax with median dark line, no pale scaled area in front of mesonotum ..... *subcantans*. Felt.

Thorax clothed with golden-yellow and rich brown scales, the former as a curved line on each side and two indistinct median ones on each side in front ..... *suknaensis*. n. sp.

Thorax with broad, sub-median rich brown vittæ bordered laterally with a broad pale creamy or silvery line and a median dark line ..... *fitchii*. Felt.

Thorax rich golden-brown, with two dark bare parallel lines in front ..... *eruthrosops*. n. sp.

Thorax black, with pale golden to creamy scales, unadorned ..... *waterhousei*. Theobald.

$\gamma\gamma$ . Hind unges simple.

Thorax with reddish-brown scales, unadorned ..... *cantator*. Coquillett.

Thorax black, with pale golden to creamy scales ..... *nipponii*. Theobald.

Thorax tessellated with gold and brown scales, very small ..... *minuta*. Theobald.

$\beta\beta$ . Abdomen yellow scaled ..... *arcanus*. Blanchard.

$\alpha$ . Legs with apical banding.

Ungues all uniserrate ..... *onondagensis*. Felt.

*aaa.* Legs with basal and apical banding.

Abdomen basally banded ..... *morsitans.* Theobald.

Abdomen unbanded, with basal lateral white spots.

Thorax deep brown in middle,  
with larger pale creamy scales  
at sides; head brown, with  
median lines of golden scales *fluviaialis.* Lutz.

Hind unguis simple.

Thorax similar; head with pale  
golden curved scales ..... *canadensis.* Theobald.\*

*aaaa.* Legs unbanded.

*δ.* Yellowish species.

Abdomen all yellow.

Fork-cells short, normal ..... *lutescens.* Fabricius.

Fork-cells rather long ..... *quasimodesta.* Theobald.

Abdomen with dark apical bands;  
smaller than above..... *bicolor.* Meigen.

*δδ.* Not yellow.

*ζ.* Abdomen unbanded.

*ε.* Hind unguis simple.

Thorax golden scaled, with two  
median dark bare lines ..... *bupengaryensis.* Theobald.

*ζζ.* Abdomen with basal median grey-white  
spots and pale lateral basal spots ... *mediopunctata.* n. sp.

*ζζζ.* Abdomen with basal pale bands.

Unguis all uniserrate.

Thorax brown, with golden  
scaled line on each side and  
traces of two golden scaled  
lines behind ..... *aurifer.* Coquillett.

Thorax with a broad rich brown  
median stripe and a long  
similar coloured patch on each  
side behind from mid meso-  
notum, a narrow pale line  
between them and the mid  
area ..... *pretans.* Grossbeck.

Thorax with silvery-grey scales  
at the sides, golden-brown in  
the middle ..... *trichura.* Dyar.

Thorax golden scaled, with two  
median dark bare lines ..... *diversa.* Theobald.

Thorax golden-yellow scaled,  
with two broad brown sub-  
median lines and a narrow  
median one ..... *lazarensis.* Felt.

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\* *Vide p. 351.* This is a *Culex.*

- Thorax golden-yellow scaled,  
with a narrow median dark  
line and a broader brownish  
one on each side ..... *abserrata*. Felt.
- Thorax brownish-grey, a brown  
spot at middle becoming wider  
behind, the sides separated by  
a narrow white line ..... *cinereoborealis*. Felt.
- Thorax dark, with golden-brown  
and golden scales, those at the  
sides paler and brighter than  
in the middle, and forming  
two more or less pale narrow  
lines ..... *nemorosa*. Meigen.
- Thorax rich brown, narrow  
curved golden scales ..... *fuscopalpalis*. n. sp.

*Culex punctor*, Kirby, *C. lateralis*, Meigen, *C. ornatus*, Meigen,  
*C. nigripes*, Zetterstedt, *C. sylvae*, Theobald, *C. terriei*, Theobald,  
should also, I fancy, come here.

**CULICADA ABFITCHII.** Felt (1905).

- Culex siphonalis*. Grossbeck (1905).  
*Culex abfitchii*. Felt (1905).

20th Rept. State Entomo. Bull., 97, Ent. 24, N. York State Mus. (1905);  
Mono. Culicid. IV., 328 (1907), Theobald.

United States.

**CULICIDA MACULATUS.** Meigen (1804).

- Culex maculatus*. Meigen (1804).  
*Culex cantans*. Meigen (1818).  
*Culex stimulans*. Walker (1848).  
*Culex fumipennis*. Stephens (1825).

Klass. u. Beschr. d. Europ. Zweif. Ins. 4, 6, ♂ (1804), Meigen; Syst.  
Beschr. I., 6, 6 (1818), Meigen; Mono. Culicid. I., 401 (1901); III., 179  
(1903), Theobald.

Germany; Austria; Scandinavia; Russia; Italy; Canada;  
India; England.

*Additional localities.*—Shrewsbury, England (Richard F. L.  
Burton); Kontenhoff, Holland, 23. v. 05, in Amsterdam  
Museum.

*Observations.*—The following note has been sent by Mr. Burton :—

" May 12, 1909.	♂	In sandstone quarry.
May 21, 1909.	♀	Biting.
May 22, 1909.	♂	Getting commoner.
May 24, 1909. ♂ & ♀		Lots by sandstone quarry.
May 30, 1909.	♂	Swarming by sandstone quarry.
June 1, 1909.	♂	Swarming amongst black alders ; sunset.
June 11, 1909.	♂	Swarming amongst black alders ; sunset.
June 19, 1909.	♂	Swarming amongst black alders ; 7 P.M.
June 23, 1909.	♂	Swarming ; ♀ biting badly.
June 28, 1909.	♂	Swarming.
July 2, 1909.	♂	Swarming ; ♀ biting badly ; 6.20 P.M.
July 12, 1909.	♂	Swarming amongst black alders ; 6.15 P.M.
July 17, 1909.	♂	Swarming ; ♀ biting.
July 18, 1908.	♀	Biting by quarry.
July 20, 1909. 1 ♂		
Aug. 3, 1908.	♀	Biting.
Aug. 8, 1908.	♀	Biting.
Aug. 18, 1908.	♀	Biting.

" Have never seen more than fifty of these flies trying to bite at the same time. Males swarm in lots of about a dozen."

#### CULICADA SUBCANTANS. Felt (1905).

*Culex cantans*. Felt (1904), non Meigen (1804).

Mosq. N. York Bull. 79, Ent. 22, N. York State Mus. 284-289 (1904) ;  
Mono. Culicid. IV., 324 (1907), Theobald.

United States.

#### CULICADA SUKNAENSIS. Theobald (1910).

Ind. Mus. Records IV., 21 (1910).

Thorax ornamented with rich brown and dull golden-yellow scales, the latter forming a curved line on each side in front and two rather indistinct median lines in front, the rich brown showing up as four obscure spots. Head dull golden-yellow with two dark spots. Abdomen deep brown with basal creamy bands and large basal creamy lateral spots. Legs brown, pale at the base, with narrow basal yellow bands. Wings with a brownish-yellow tinge.

♀. Head dark brown, with small narrow-curved golden scales in the middle, dark upright forked scales behind, rich

ochreous ones in front, a patch of dark flat scales at the sides bordered along the eyes with pale creamy scales and flat pale creamy ones still more laterally, the pale scales bordering the eyes are small narrow-curved ones ; chaetae between the eyes bright golden-brown, followed by some darker ones at the sides ; clypeus, palpi and proboscis deep brown ; antennae brown, basal segment bright golden-yellow, with some small pale flat scales, base of second segment pale testaceous.

Thorax deep rich brown, clothed with golden-yellow and rich brown curved scales, the former as two obscure curved lateral lines and two broad median ones (the latter almost in one) and scattered irregularly over the basal portion, a few paler ones in front of the roots of the wings and some short pale and brown chaetae ; supra-alar chaetae brown ; scutellum brown with small narrow-curved pale scales ; metanotum almost black ; pleurae deep brown, with patches of pale flat scales and tufts of golden-brown chaetae.

Abdomen deep brown, with basal yellow curved bands, and yellow prominent lateral spots ; posterior border-bristles pale golden ; venter mostly clothed with large flat yellowish scales, almost white towards the base.

Legs brown, femora pale below, metatarsi and all the tarsals with narrow pale yellow bands, pale knee spots, femora and



Fig. 139.  
Wing of *Culicada suknaensis*. ♀. Theobald.

tibiae spinose, spines dusky and golden ; unguis all equal and uniserrate.

Wings with short fork-cells ; the first sub-marginal longer and narrower than the second posterior, its stem about two-thirds the length of the cell ; its base nearly level with that of the

second posterior cell; stem of the latter as long as the cell; posterior cross-vein longer than the mid, not quite its own length distant from it; *the base of the subcostal and first long vein prominently densely scaled with black scales.* Halteres with ochreous stem, fuscous knobs with pale creamy apical scales.

*Length.*—4 to 5 mm.

*Habitat.*—Sukna, 500 ft., E. Himalayas.

*Time of capture.*—1 and 2. vii. 08.

*Observations.*—Described from four perfect ♀'s. It comes near *Culicada nipponii*, Theobald, but can be told by the absence of pale apical abdominal scales and median grey scales and dark flat-scaled lateral cephalic patches. The abdomen in all four is thick and short, but this may be due to ingested blood. The ornamentation of the thorax varies in different lights. The dark thick-scaled area at the base of the wing is very characteristic. The specimens were taken in dense jungle, and bit during the day. The venation varies slightly.

*Type* in the Indian Museum, Calcutta.

**CULICADA FITCHII.** Felt and Young (1904).

***Culex fitchii.*** Felt and Young (1904).

Mosq. N. Y. State Bull. 79, Ent. 22, N. Y. State Mus. 281 (1904);  
Mono. Culicid. IV., 321 (1907), Theobald.

United States.

**CULICADA ERUTHROSOPS.** nov. sp.

Head and thorax rich golden-brown; palpi brown with pale apex; proboscis brown somewhat paler in the middle; pleurae brown with white puncta. Abdomen black with basal creamy-white bands contracted in the middle; venter mostly creamy with narrow dark apical borders. Legs with basal pale bands.

♀. Head deep brown with rather large narrow-curved golden and creamy scales, dark upright forked scales, a thin border around the eyes of paler small narrow-curved scales; flat lateral scales black with a median spot of pale creamy ones; chaetae projecting over the eyes, brown; antennae brown, basal segment testaceous, dark on one side with small creamy flat scales and some dark hairs; second segment testaceous at base; palpi deep brown with a few pale scales at apex; proboscis deep brown with some scattered yellow scales in the middle.

Thorax deep brown clothed with rich golden-brown small

narrow-curved scales, traces of two parallel median lines in front devoid of scales and showing a dark colour ; chaetae brown with pale reflection ; scutellum paler brown with narrow-curved paler scales, larger than on the mesonotum, and with long golden-brown border-bristles ; metanotum dark brown ; pleurae deep brown with patches of flat creamy white scales.

Abdomen black with basal creamy bands, which are somewhat contracted in the middle, apical segment with yellow scales on the apex ; basal segment with a patch of median white scales from which arise long thin golden hairs ; posterior border-bristles pale golden with darker reflections ; venter most pale creamy scaled, the apical borders of the segments dark.

Legs with femora brown with some scattered pale scales, a creamy apex and pale beneath ; tibiae also mottled and pale at apices ; metatarsi and tarsals of fore and mid legs basally pale



Fig. 140.  
Wing of *Culicada eruthrosops*. ♀. n. sp.

banded except the last segment ; pale banding more pronounced in the hind legs (last segment missing) ; fore and mid unguis equal and uniserrate.

Wings with brown scales, some creamy ones on the costa and first long vein ; first fork-cell longer and narrower than the second fork-cell, their bases about level, stem of the first fork-cell rather more than half the length of the cell ; stem of the second fork-cell about two-thirds the length of the cell ; posterior cross-vein not quite as long as the mid, which is large, and about its own length distant from it.

*Length*.—5 mm.

*Habitat*.—Trincomalee, Ceylon (E. Green).

*Time of capture*.—xi. 1906.

*Observations*.—Described from a single perfect ♀. A very beautiful species, with golden scaled thorax and white banded abdomen, which evidently comes in the genus *Culicada*, but the fork-cells are longer than usual in that genus.

*Type* in the British Museum.

**CULICADA WATERHOUSEI.** Theobald (1905).

*Culex waterhousei*. Theobald (1905).

Ann. Mag. Nat. Hist. Sci. 7, XVI., 674, Dec. (1905); Mono. Culicid. IV., 332 (1907), Theobald.

England, New Forest.

*Type* in the British Museum.

**CULICADA CANTATOR.** Coquillett (1903).

*Culex cantator*. Coquillett (1903).

Canad. Entomo. 255 (1903), Coquillett; Mono. Culicid. IV., 334 (1907), Theobald.

United States.

*Type* in the National Museum, Washington.

**CULICADA NIPPONII.** Theobald (1907).

Mono. Culicid. IV., 337 (1907).

Karnizana, Japan.

*Type* in the British Museum.

**CULICADA MINUTA.** Theobald (1907).

Mono. Culicid. IV., 338 (1907).

India.

*Type* in the British Museum.

**CULICADA ARCANUS.** Blanchard (1903).

*Culex arcanus*. Blanchard (1903).

*Culicada flavescens*. Theobald (1901) non Fabricius.

*Culex flavescens*. Theobald (1901).

Mono. Culicid. I., 410 (1901), Theobald; C. R. de la Soc. de Biol. LV., 570 (1903), Blanchard.

Locality not stated.

Four specimens, Hope Collection, Oxford.

*Type* placed in British Museum.

## CULICADA ONONDAGENSIS. Felt (1904).

*Culex onondagensis.* Felt (1904).

Bull. 79, Ent. 22, N. Y. State Mus. 304 (1904), Felt; Mono. Culicid. IV., 340 (1907), Theobald.

United States (Lake Onondaga, Syracuse).

## CULICADA FLUVIATILIS. Lutz (1904).

*Culex fluviatilis.* Lutz (1904).

Mosq. do Brazil, 42, 72, 77 (1904), Lutz; Mono. Culicid. IV., 342 (1907), Theobald.

São Paulo, Brazil.

## CULICADA (?) CANADENSIS. Theobald (1901).

*Culex canadensis.* Theobald (1901).

Mono. Culicid. II., 3 (1901); IV., 341 (1907).

Canada, United States. Probably a true *Culex* (*vide* p. 351).  
*Type* in the British Museum.

## CULICADA LUTESCENS. Fabricius (1781).

*Culex lutescens.* Fabricius (1781).*Culex flavescens.* Villers (1789) non Theobald.

*Culex flavescens.* Fabricius (1805) non Villiers (1789) non Theobald (1901).

Species Insectorum, II., 470 (1781), Fabricius; Mono. Culicid. IV., 344 (1907), Theobald.

Germany; Budapest, Hungary.

## CULICADA MORSITANS. Theobald (1901).

*Culex morsitans.* Theobald (1901).

Mono. Culicid. II., 8 (1901), Theobald.

England, from Verrall's collection (no locality), and found by myself at Great Staughton, Hunts.

*Additional localities.*—Peterswold, Uilvorsum, Boaris in Holland, vii. 00, 01, 02 and 03. ♂'s and ♀'s, in Amsterdam Museum; Shrewsbury, England (Richard F. L. Burton).

*Observations.*—The following notes are sent by Mr. Richard F. L. Burton, of Longner Hall, Shrewsbury :—

- “ May 12, 1909. ♂ Sheltering in Moat Wood Latrine.
- May 24, 1909. 2 ♂’s 1 ♀ Sheltering in sandstone quarry.
- June 28, 1909. ♂ Swarming under oak tree about a box bush, old garden.
- June 29, 1909. ♂ Swarming under oak tree about a box bush, old garden.
- June 30, 1909. ♂ & ♀ Swarming amongst spruces by exit of house drain.
- July 1, 1909. ♂ & ♀ Swarming amongst spruces by exit of house drain ; 9 p.m.
- July 2, 1909. ♂ & ♀ Swarming amongst spruces by exit of house drain ; after sunset.
- July 3, 5, 10, 16, 17, 26. ♂ & ♀ Swarming amongst spruces by exit of house drain.
- Aug. 6, 1909. ♂ & ♀ Swarming amongst spruces by exit of house drain.
- Aug. 27, 1909. ♂ & ♀ Swarming amongst spruces by exit of house drain ; 7.30 p.m.

“ I have never seen this fly attempt to bite. I had only found a few of them sheltering (♀ and ♂) during 1906, 1907 and 1908, and did not keep the dates. The ♂’s swarm in lots of ten or a dozen at most.”

#### CULICADA QUASIMODESTA. Theobald (1905).

*Culex quasimodestus.* Theobald (1905).

Ann. Mus. Nat. Hung. III., 88 (1905); Mono. Culicid. IV., 345 (1907),  
Theobald.

Sfax, Tunis.

Type in the National Museum, Budapest.

#### CULICADA BICOLOR. Meigen (1818).

*Culex bicolor.* Meigen (1818).

Syst. Beschr. I., 9 (1818), Meigen ; Mono. Culicid. IV., 347 (1907),  
Theobald.

Austria ; Russia ; England ; Sfax, Tunis.

CULICADA BUPENGARYENSIS. Theobald (1905).

*Culex bupengaryensis.* Theobald (1905).

Journ. Econ. Biol. I., No. 1, 27 (1905); Mono. Culicid. IV., 348 (1909),  
Theobald.

Bupengary, South Queensland.

CULICADA MEDIOPUNCTATA. nov. sp.

Thorax deep brown; head paler with a creamy border around the eyes; palpi and proboscis deep brown. Abdomen deep brown, the segments with basal median greyish-white spots, pale lateral basal spots; venter yellow, the segments with narrow apical dark borders. Legs deep brown, unbanded, apices of hind tibiae yellow, knee spots pale.

♀. Head brown with narrow-curved pale scales, a dense bright golden border of scales around the eyes; upright forked scales thin, dark; chaetae dark brown, somewhat golden between the eyes; palpi rather long, black; proboscis and clypeus black; antennae black, basal segment and base of second segment bright testaceous, the former with some small flat pale scales.

Thorax deep rich brown with small narrow-curved golden scales; some short golden chaetae in front of the roots of the wings and the others dark brown; scutellum brown with narrow-curved pale scales and deep brown border-bristles; metanotum deep brown; pleurae pale brown with patches of dull creamy flat scales.

Abdomen deep blackish-brown, almost black, the segments, except the basal one, with median basal dull-white patches; border-bristles golden; laterally are pale creamy basal lateral patches; venter yellow scaled, except at the apex, where they are creamy, each segment with a narrow dark scaled apical border.

Legs deep brown, except the femora, which are ochreous below and with some pale scales scattered about, knee spots pale, apex of hind tibiae with a prominent white band; chaetae golden; unguis all equal and uniserrate.

Wings with the fork-cells short; the first sub-marginal a little longer and narrower than the second posterior cell, its stem about half the length of the cell, its base slightly nearer the base of the wing, stem of the second posterior about two-thirds the

length of the cell; posterior cross-vein about its own length distant from the mid. Membrane slightly tinged with yellowish.

Halteres with pale stem and fuscous knob.

*Length.*—6 mm.

*Time of capture.*—3. x. 07.

*Habitat.*—Obuasi, Ashanti (Dr. Graham).

*Observations.*—One ♀ caught in bush, 5 P.M. A very marked Culicada, easily told by the basal central pale abdominal spots.

*Type* in the British Museum.

**CULICADA AURIFER.** Coquillett (1903).

*Culiselsa aurifer.* Coquillett (1903).

*Culex aurifer.* Coquillett (1903).

Canad. Entomo. XXXV., 255 (1903), Coquillett; Mono. Culicid. IV., 351 (1907), Theobald.

United States.

**CULICADA PRETANS.** Grossbeck (1904).

*Culex pretans.* Grossbeck (1904).

Ento. News., 332, Dec. (1904), Grossbeck; Mono. Culicid. IV., 353 (1907), Theobald.

United States; Alaska.

**CULICADA TRICHURA.** Dyar (1904).

*Culex trichura.* Dyar (1904).

N. Y. Ent. Soc. Journ. 12, p. 169 (1904), Dyar; Mono. Culicid. IV., 357 (1907), Theobald.

United States.

**CULICADA DIVERSA.** Theobald (1902).

*Culex diversus.* Theobald (1902).

Mono. Culicid. II., 73, ♀ (1901); IV., 359 (1907), Theobald.

England, Tunbridge Wells; New Forest; Wye; Great Avonmouth, Bristol; Woodford Green, Essex.

*Additional locality.*—Shrewsbury, England (Richard F. L. Burton).

*Observations.*—The following notes have been sent by Mr. Burton :—

“ May 4, 1909.	♂	Old garden ; 11 A.M.
May 8, 1909.	♂	Swarming.
May 9, 1909.	♂	Swarming ; ♀ about.
May 11, 1909.	♂	Swarming in most of the woods all day.
May 16, 1909.	♂	Swarming in most of the woods all day.
May 21, 1909.	♀	Biting.
May 22, 1909.	♂	Swarming in most of the woods all day.
May 28, 1909.	♂	Swarming in most of the woods all day.
June 2, 1909.	♂	Swarming in most of the woods all day.
June 11, 1909.	♂	Swarming in most of the woods all day.
June 17, 1909.	♂	Swarming in most of the woods all day.
June 19, 1909.	♂	Swarming in most of the woods all day.
June 28, 1909.	♂	Swarming in most of the woods all day.
July 1, 1909.	♂	Swarming ; ♀ biting ; very few left.
July 12, 1909.	1 ♂	

“ Have never seen more than ten of them biting at one time. During 1906, 1907 and 1908 there were lots about, but I put down no notes. Males swarm in lots of seven or eight, though I have seen what I take to be a small variety in countless numbers.”

#### *Types* in the British Museum.

#### CULICADA LAZARENSIS. Felt and Young (1904).

*Culex lazarensis.* Felt and Young (1904).

Science (N. S.), XX., No. 505, 312; Bull. 79, Ent. 22, N. Y. State Mus. 309 and 319b, App. (1904), Felt.; Mono. Culicid. IV., 360 (1907), Theobald.

United States.

#### CULICADA ABSERRATA. Felt (1904).

*Culex abserratus.* Felt (1904).

*Culex punctor.* Dyar and Smith (non Kirby).

Mosq. N. Y. Bull. 79, Ent. 22, N. Y. State Mus., 329 (1904), Felt; Mono. Culicid. IV., 364 (1907), Theobald.

United States.

## CULICADA CINEREOBOREALIS. Felt (1904).

*Culex cinereoborealis*. Felt (1904).

Bull. 79, Ent. 22, N. Y. State Mus., 312 (1904), Felt; Mono. Culicid.  
IV., 367 (1907), Theobald.

United States.

## CULICADA NEMOROSA. Meigen (1818).

*Culex nemorosus*. Meigen (1818).*Culex sylvaticus*. Meigen (1818).*Culex guttatus*. Curtis (1835).*Culex provocans*. Walker (1848).*Culex salinus*. Ficalbi (1896).*Culex reptans*. Meigen (1804) ?*Culex fasciatus*. Meigen (1804) ?*Culex stricticus*. Meigen (1804) ?

Syst. Beschr. Eur. Zweiflüg., I. 4, 3 (1818), Meigen; Mono. Culicid.  
II., 80-86 (1901); IV., 370 (1907), Theobald.

Germany; Hungary; Finmark; England.

*Additional localities*.—Alaska; Fort Mackenzie, Wyo.; Rock Island Arsenal, Ill.; Fort Casey, Wash.; Montana; Fort Snelling, Minn., U.S.A. (Ludlow).

## CULICADA FUSCOPALPALIS. nov. sp.

Thorax rich brown with narrow-curved golden scales scattered over it; palpi of ♂ deep fuscous brown with fuscous and brown hairs. Abdomen brown with basal pale bands; venter ochreous with narrow dark apical bands; legs brown, unbanded, with a pale apical tibial spot to the hind legs.

♂. Head brown with rather large dull creamy curved scales, dusky upright forked scales, flat dull creamy ones at the sides, with more pointed ones around the eye borders; chaetae brown; eyes golden and coppery; palpi longer than the proboscis by the last segment and apex of the penultimate, deep fuscous brown, the last two segments slightly swollen, the apical narrowing to the tip, not quite as long as the penultimate, with long black hairs, particularly long and dense on one side of the base of the penultimate and on the other side at the apex, and long hairs at the apex of the ante-penultimate; antennae with

pale bands and very dense fuscous plume-hairs; proboscis deep brown.

Thorax deep rich brown with scattered narrow-curved pale golden scales, brown and golden-brown chaetae; scutellum pale brown with narrow-curved pale scales; pleurae deep brown with

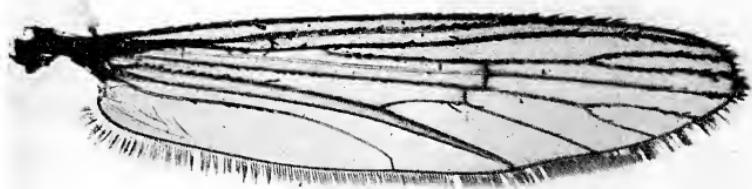


Fig. 141.  
*Culicada fuscopalpalis.* ♂. n. sp.

flat loosely applied creamy and dull white scales; metanotum brown.

Abdomen deep brown with black scales and basal bands of creamy scales, long golden-brown lateral hairs; venter pale ochreous with narrow black apical bands.

Legs deep brown, paler at the base and on the under side of the femora, a yellow spot at the apex of the hind tibiae; hind tibiae with pale chaetae; fore and mid unguis unequal, both uniserrate, hind equal and uniserrate.

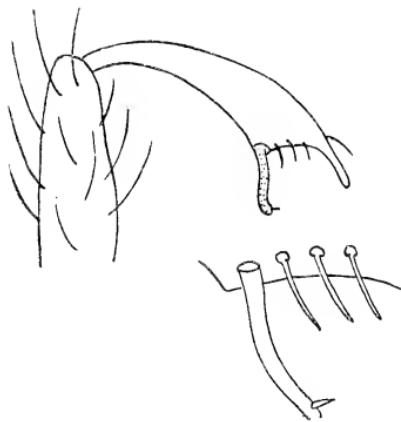


Fig. 142.  
*Culicada fuscopalpalis.* n. sp.  
♂ clasper.

as a very distinct pseudo-vein between the fifth and sixth; the marginal cell very long and swollen in the middle.

The male genitalia with a broadly expanding clasper ending

wings with short fork-cells, the first longer and narrower than the second, its stem nearly as long as the cell, its base level with that of the second; stem of the second longer than the cell; posterior cross-vein about its own length distant from the mid, sloping towards the apex of wing; the third vein carried to the base of the wing, and

*Notes.*—Dyar calls *Culicada abserrata*, Felt., a synonym of *Culex punctor*, Kirby. There is no possible connection. Smith (p. 681, 1906) described *punctor*, Kirby, from New Jersey; this is Felt's *Culex abserratus*.

**CULICADA LATERALIS.** Meigen (1818).

*Culex lateralis.* Meigen (1818).

Syst. Beschr. Eur. Zweiflüg. I., 5, 5 (1818), Meigen; Mono. Culicid. II., 51 (1901); III. 191 (1903), Theobald.

Austria; Russia; Hungary; England; Switzerland; Algeria.

*Additional localities.*—Venlo, Holland, one ♀, vi. 92, in Amsterdam Museum; Shrewsbury, England (R. F. L. Burton).

*Observations.*—The following record has been sent by Mr. Richard F. L. Burton, from Longner Hall, Shrewsbury:—

“ May 31, 1908.	♀	Biting above sandstone quarry.
June 12, 1908.	6 ♂	Biting at withy bed by rookery.
June 21, 1908.	♂	Several feeding on blossom of cow parsnip; 11.30 A.M.
June 20, 1907.	♂	Quantities sheltering amongst dog mercury and nettle.
June 21, 1909.	♀	Biting indoors; 3.50 P.M.
June 23, 1908.	♂ & ♀	About in most of the woods.
June 28, 1909.	♀	Biting amongst larches.
July 1, 1908.	♀	Biting out of doors.
July 5, 1909.	♀	Biting.
July 12, 1908.	♀	Biting in laboratory; midday.
July 21, 1908.	♂ & ♀	Still about.
July 31, 1909.	♀	Biting.
Aug. 10, 1909.	♀	Biting.

“This fly varies in quantity. I have not seen a ♂ during 1909. Have never seen them pairing. Have never seen more than four trying to bite at the same time.”

**CULICADA ORNATA.** Meigen (1818) non Ficalbi.

*Culex ornatus.* Meigen (1818).

*Culex equinus.* Meigen (1818).

Syst. Beschr. Eur. Zweiflüg. I., 5, 4 (1818), Meigen; Mono. Culicid. II., 77 (1901), Theobald.

Germany; Austria; Holland; Russia; Scandinavia; Britain.

in a process on one side and a dark brown blunt spine on the other, giving it a forked appearance.

*Length*.—6 mm.

*Habitat*.—Obuasi, Ashanti (Dr. Graham).

*Time of capture*.—2. x. 07.

*Observations*.—Described from a ♂ caught in the bush. This



Fig. 143.

*Culicada fuscopalpis*. ♂ n. sp.  
Male genitalia.

well-marked *Culicada* can at once be told by the male claspers and the marked marginal cell in the ♂. No ♀ was found in the collection.

*Type* in the British Museum.

CULICADA PUNCTOR. Kirby (1837).

*Culex punctor*. Kirby (non Dyar and Smith).

Fauna Boreali-Americanæ Ins. 308 (1837), Kirby; Mono. Culicid. II., 75 (1901); IV., 371 (1907), Theobald; Journ. N. Y. Ent. Soc. XII., Dyar.

United States.

*Additional localities*.—Alaska; Fort Casey, Washington, U.S.A. (Ludlow).

**CULICADA NIGRIPES.** Zetterstedt (1838).

*Culex nigripes.* Zetterstedt (1838).

*Culex impiger.* Walker (1848).

Ins. Lapp. 807, 6 (1838), Zetterstedt; Mono. Culicid. II., 93 (1901); III., 193 (1903).

Lapland; Greenland; Arctic Circle generally; United States; England; Kashmir, India.\*

**CULICADA SYLVAE.** Theobald (1903).

*Culex nigriper.* var. *sylvae*. Theobald (1901).

Mono. Culicid. II., 96 (1901); III. 194 (1903).

England, New Forest, Hampshire.

*Type* in Mr. Bradley's Collection.

**CULICADA TERRIEI.** Theobald (1903).

*Culex terriei.* Theobald (1903).

Mono. Culicid. III., 193 (1903).

England, Dartford, Kent.

*Type* in the British Museum.

### GENUS **LEUCOMYIA.** Theobald (1907).

Mono. Culicid. IV., 372 (1907).

Five† species and two distinct varieties have now been described in this genus. They have all the marked silvery-grey or grey area in front of the thorax.

The species tabulate as follows:—

a. Legs with apical and basal pale banding.

Abdomen with basal pale bands and almost  
basal lateral pale spots; ♀ unguis all  
simple ..... *gelida*. Theobald.‡

\* American specimens *may* differ, but I cannot see a single character to separate them, and do not believe they are separate.

† Giles *Taeniorhynchus Whitmorei*, 1904, is a *Leucomyia* according to Mr. F. Carter, and must be placed here (*vide Genus Taeniorhynchus*).

‡ Two well marked varieties of *gelida* occur:—

var. *bipunctata* Theo.—two dark spots on pale thoracic area.

var. *cuneata* Theo.—abdomen with the basal pale bands projecting in the middle.

- Similar but the abdomen with yellow  
apical bands as well ..... *sinensis*. Theobald.
- aa.* Legs with basal pale bands.  
Abdomen brown with median grey line  
and small pale apical lateral spots;  
ungues of ♀ simple ..... *plegipennis*. Theobald.  
Abdomen with basal pale bands; wings  
with mottled scales; fore and mid ♀  
ungues uniserrate ..... *australiensis*. n. sp.
- aaa.* Femora and tibiae with yellow spots; tarsal  
banding involves the joints.  
Anterior  $\frac{2}{3}$  thorax pale scaled, shading into  
silvery-white ..... *quasigelidus*. Theobald.
- aaaa.* Legs unbanded ..... *scapularis*. Rondani.

**LEUCOMYIA GELIDA.** Theobald (1901).

*Culex gelidus.* Theobald (1901).

Mono. Culicid. II., 20 (1901); III., 180 (1903), Theobald; Journ. Phil. Sci. I., 9, 987 (1906), Banks; Mono. Culicid. IV., 372 (1907), Theobald; Mosq. Philip. Isl., 9 (1908), Ludlow; Rec. Ind. Mus. II., pt. iii., No. 30, 298 (1908), Theobald.

Ceylon; India; Straits Settlements; Philippine Islands; Sarawak.

*Additional localities.*—Pangasinan, Camp Gregg, Bayambang, P. I. (W. P. Chamberlain in Banks); Calcutta (Annandale); Katihar, Purneah, N. Bengal; Sylhet, Assam (Major Hall); between Bolpore and Rampore Haut, E. I. Railway, Bengal (C. A. Paiva); Kalattupuzha, W. base of W. Ghats, Travancore, 19. xi. 08 (Annandale); Bhogaon, Purneah Dist., N. Bengal, 30. ix. 08 (C. A. Paiva) (5); i. x. 08 (2); 3. x. 08 (2); 7. x. 08; Madras Town, 30. x. 08 (2); 31. x. 08 (1); Calcutta, 3-4. viii. 07. (N.A.) 4; 5. viii. and 9. viii. 07; Travancore; Coastal Region, 5. xi. 08 (Annandale); Ernakulam, Cochin State, Malabar, 4. xi. 08 (Annandale); Rajshai, E. Bengal, 1-6. ii. 07 (N.A.); Rangoon, Burma, 25. ii. 08 (N.A.).

*Time of Capture.*—August, September, October, November and December in Calcutta; August and October, Purneah.

*Observations.*—Annandale records it as “not uncommon in houses and at light and in the open on shrubs at Calcutta.” Paiva records it from railway carriages.

*LEUCOMYIA GELIDA*. Theobald.var. *cuneata*. Theobald (1901).

Mono. Culicid. II., 22 (1901), Theobald; Phil. Jour. Sci. I., 9, 987 (1906), Banks; Mono. Culicid. IV., 374 (1907), Theobald; Mosq. Philip. Isls., 9 (1908), Ludlow.

Taipang, Perak; Quilon, Travancore, S. India; Sarawak.

*Additional localities*.—Pampanga, Camp Stotsenberg, Angeles P. I. (E. R. Whitmore); Manila P. I. (Banks); Kulattupuzha, W. base of W. Ghats, Travancore, 19. xi. 08 (Annandale); Yarkam, Travancore, Coastal Region, 5. xi. 08 (Annandale); Balighai, near Puri, Orissa, 23. x. 08, at light (Annandale).

*Note*.—Banks refers to this species in the Philippines as “a fairly common mosquito flying at twilight and during early evening.”

*LEUCOMYIA GELIDA* var. *bipunctata*. Theobald (1907).

Mono. Culicid. IV., 374 (1907).

Sarawak; India.

*LEUCOMYIA SINENSIS*. Theobald. n. sp.*Leucomyia gelida*, var *sinensis* (1903).

Mono. Culicid. III., 180 (1903).

Shaohyling, China.

*Additional locality*.—Balighai, near Puri, Orissa, 23. x. 08 at light, in house becoming active after dark (Annandale). In Indian Museum, Calcutta.

*Type* in the British Museum.

*LEUCOMYIA PLEGIPENNIS*. Theobald (1907).

Mono. Culicid. IV., 375 (1907).

Kobe, Japan.

*Additional locality*.—West Lake, Hangchow, China. 1 ♀. 27. vi. 07 (C. E. Cornford).

*LEUCOMYIA AUSTRALIENSIS*. n. sp.

Head brown with scattered pale scales and a pale border around the eyes; proboscis brown, deep ochreous in the middle, but not banded. Thorax bright brown, the front half with silvery-white scales, the back with darker scales and some lines

of pale ones. Abdomen deep brown with basal creamy bands largest in the middle and with prominent creamy basal lateral spots. Legs brown, ochreous brown at base, metatarsi and first tarsals with basal pale bands. Wings with mottled scales.

♀. Head deep brown, clothed with narrow and rather broad curved creamy scales; deep brown upright forked ones behind and golden-brown frontal chaetae; antennae deep brown with black verticillate hairs and paler pubescence on the internodes, basal segment dark and ferruginous in places with small black hairs, base of second segment ferruginous. Palpi dark brown. Proboscis deep brown, the scales in the middle showing paler reflections.

Thorax rich brown, the anterior half with narrow-curved silvery-white scales, showing creamy reflections at the sides, the posterior half with smaller golden brown narrow-curved scales and with two lines of paler scales at the side of the bare space before the scutellum; chaetae rich brown; scutellum brown with narrow-curved pale scales and rich brown border-bristles; metanotum chestnut-brown with darker markings; pleurae rich brown with flat dull white to creamy scales.

Abdomen bright testaceous, clothed with dark scales showing dull violet reflections and with basal pale creamy bands which swell out in the middle and with basal creamy white lateral spots; border-bristles pale golden; venter apparently testaceous.

Legs brown with ochreous reflections; base and under side of femora pale, a pale band at the base of the metatarsi and first tarsal; fore and mid unguis uniserrate (hind ?).

Wings with brown scales, some traces of ochreous ones; first sub-marginal cell longer and narrower than the second posterior cell, its base about level with that of the latter, its stem slightly more than half the length of the cell, stem of the second posterior about two-thirds the length of the cell; mid cross-vein longer than the supernumerary, the posterior nearly the same length as the mid, sloping forwards and nearly twice its own length distant from it.

*Length.*—3·5 mm.

*Habitat.*—Stannary Hills, Queensland.

*Time of capture.*—27. iii. 09 (Dr. Bancroft).

*Observations.*—Described from a nearly perfect ♀. Easily told from other *Leucomyia* by its paler colour and leg banding. It appears to be rare, as Dr. Bancroft had only been able to obtain one specimen.

*Type* in the British Museum.

LEUCOMYIA QUASIGELIDA. Theobald (1903).

*Culex quasigelidus*. Theobald (1903).

Mono. Culicid. III., 181 (1903).

Entebbe, Uganda.

Type in the British Museum.

LEUCOMYIA SCAPULARIS. Rondani (1848).

*Culex scapularis*. Rondani (1848).

*Ochlerotatus confirmatus*. Arribalzaga (1891).

*Culex confirmatus*. Arribalzaga—Theobald (1901).

Studi entomologici pubblicati per cura di H. Baudi e di E. Truqui, Torino. I., 109 (1848), Rondani; Dipt. Argentina, 46 (1899), Arribalzaga; Mono. Culicid. II., 42 (1901), Theobald.

Chili; Buenos Ayres; Brazil; British and French Guiana; Jamaica.

Notes.—There is no doubt that Arribalzaga's *confirmatus* is the same as Rondani's *scapularis*.

Miss Ludlow writes:—

"Another instance of small variation occurs in the *Culex confirmatus*, Arribalzaga, sent me by Lieut. R. Boyd Miller, Asst. Surg. U.S.A., from Port Sereven, Tybee Island, Ga., which agrees perfectly with the description given by Theobald (Monograph, Vol. II., p. 42), except that the femora are white nearly to the apex dorsally as well as ventrally, and all the unguis are uniserrate; the latter is, of course, the important variation." The hind unguis of all *L. scapularis* I have seen have teeth, and I cannot help thinking that some other species is referred to as one never sees any variations in the unguis.

### GENUS CULICELSA. Felt (1904).

Bull. 79, Ent. 22, N. Y. State Mus., 391, 6 (1904), Felt; Mono. Culicid. IV., 377 (1907), Theobald.

Ten species have so far been placed in this genus. They are dark, stout mosquitoes, with basally banded legs, and form a natural group.

a. Proboscis banded.

β. Legs basally banded.

γ. Abdomen basally banded.

Last hind tarsal white; ♀ unguis

1.1-1.1-0.0 ..... *taeniorhynchus*. Wiedemann.

Last hind tarsal not all white;

♀ unguis 0.0-0.0-0.0..... *annulirostris*. Skuse.

Similar but proboscis with very

wide, not narrow pale band ... *albirostris*. Macquart.

γγ. Abdomen with first 4 segments

basally white, last 2 apical  
yellow bands.

Thoracic scales narrow-curved;

♀ unguis 1.1-1.1-0.0..... *vigilax*. Skuse.

Thoracic scales spindle-shaped ... *pseudovigilax*. Theobald.

ββ. Legs with apical and basal bands.

Abdomen narrow basal white bands;

♀ unguis 0.0-0.0-0.0.

Thorax with narrow-curved pale

dull golden and brown scales,

the brown forming 2 large

patches in front..... *accraensis*. n. sp.

Thorax with narrow - curved

bronzy - black scales, 2 thin

parallel lines of golden ones

in front, forming spots near

middle and a mass in front of

the scutellum..... *neotaeniorhynchus*. n. sp.

αα. Proboscis unbanded.

β. Abdomen basally banded.

γ. Legs basally banded.

δ. A white ring near apex of femora.

♀ unguis 1.1-1.1-1.1 ..... *alboannulatus*. Macquart.

δδ. No white ring near apex of  
femora.

Thorax unadorned; deep brown,  
golden scales more or less in  
lines..... *togoi*. Theobald.

Thorax with conspicuous me-  
dian rich brown stripe, yel-  
lower and paler posteriorly,  
short sub-median laterallines  
on posterior  $\frac{1}{3}$ , rest golden  
yellow scaled..... *auroides*. Felt.

#### CULICELSA TAENIORHYNCHUS. Wiedemann (1821).

*Culex taeniorhynchus*. Wiedemann (1821).

Dipt. Exot., 43 (1821), Wiedemann; Mono. Culicid. I., 350 (1901).

Florida ; United States (widely distributed) ; New Amsterdam,  
etc., British Guiana ; St. Lucia ; Honduras ; Brazil ; Mexico ;  
Barbados ; Antigua ; Trinidad ; Jamaica.

**CULICELSA ANNULIROSTRIS.** Skuse (1889).*Culex annulirostris.* Skuse (1889).

Proc. Linn. Soc. N. S. Wales, 1737 (1889), Skuse; Mono. Culicid. I., 365 (1901); III., 162 (1903); IV., 382 (1907), Theobald.

Blue Mountains, etc., N. S. Wales; Queensland.

*Type* in the Museum, Sydney, N. S. Wales.

**CULICELSA ALBIROSTRIS.** Macquart (1850).*Culex albirostris.* Macquart (1850).

Dipt. Exotica. Supp. IV., 10 (1850), Macquart; Mono. Culicid. I., 382 (1901); III., 162 (1903), Theobald.

New Zealand; Port Darwin, N. Australia.

The proboscis has a much wider pale band than in *annulirostris*, Skuse,

**CULICELSA VIGILAX.** Skuse (1889).*Culex vigilax.* Skuse (1889), non Theobald (1901).*Culex marinus.* Theobald (1901).

Proc. Linn. Soc. N. S. Wales, 1731 (1889), Skuse; Mono. Culicid. I., 396 (1901); III., 178 (1903); IV., 382 (1907), Theobald.

New South Wales; S. Queensland; Johnstone River, N. Queensland.

*Type* in the Sydney Museum.

**CULICELSA PSEUDOVIGILAX.** Theobald (1907).*Culex vigilax.* Theobald (non Skuse).

Mono. Culicid. I., 395 (1901); IV., 382 (1907).

S. Queensland.

*Type* in the British Museum.

**CULICELSA ACCRAENSIS.** nov. sp.

Thorax mottled with rich brown and pale dull golden scales; pleurae greyish-brown with white puncta; proboscis deep brown with a prominent median creamy band. Abdomen black with narrow basal white bands and lateral basal spots in the female,

broader in the male. Legs deep brown with narrow pale banding to some extent involving both sides of the segments.

♀. Head brown with narrow-curved pale creamy scales and flat creamy scales at the sides ; dark upright forked scales behind, deep bright ochreous ones in front ; clypeus brown ; proboscis jet black with a rather broad median creamy band ; palpi black scaled with a few creamy scales at the tip.

Thorax black clothed with narrow-curved pale dull golden and some brown scales, the brown forming two large patches in front ; chaetae dark brown, small short ones in front of the base of the wings ; scutellum brown with narrow-curved pale scales ; with seven long, dark posterior border-bristles and some small golden ones ; metanotum deep brown ; pleurae paler brown with some patches of flat white scales.

Abdomen black scaled ; the first segment all black, with



Fig. 144.

Wing of *Culicelsa accraensis*. ♀. n. sp. (Type.)

long dense hairs dark at the base, golden at the tips ; other segments with narrow white basal bands ; penultimate segment with an apical creamy-white border, border-bristles brown and golden ; there are also basal lateral pale patches ; venter broadly white scaled at the bases of the segments, dark apically.

Legs deep brown, under side and apices of the femora creamy ; under side of the rest of the legs with ochreous reflections, traces of narrow yellowish pale banding to the fore and mid feet, except on the last segment, the banding more pronounced on the hind ; apices of femora and tibiae spinose, spines dark ; unguis equal and simple.

Wings with rather broad linear lateral vein scales ; first fork-cell longer and slightly narrower than the second, their bases about level ; stem of the former rather more than one-third the length of the cell, that of the latter not quite half the

length of the cell; posterior cross-vein a little more than twice its own length distant from the mid.

*Length*.—4·5 mm.

♂. Similar to the female, but the abdominal markings much more distinct; abdomen hairy, hairs brown. Fore and mid unges unequal, the larger toothed, the smaller *apparently* simple, the tooth on the mid larger unguis very large compared to the first; hind equal and simple. Claspers of the genitalia rather broad and deep brown. Antennae densely plumose with brown plume hairs.

*Length*.—5 mm.

*Habitat*.—Accra (Dr. Graham).

*Time of capture*.—8, 14, 19. vi. 08.

*Observations*.—Described from two ♀'s and one ♂ caught in latrines.

The species comes very near *C. taeniorhynchus*, but can at once be told by the thoracic adornment, less conspicuous banded abdomen and legs, and non-serrate unges in the ♀.

*Type* in the British Museum.

CULICELSA ACCRAENSIS. nov. sp.

var. *fusca*. n. v.

This exactly resembles the type, but the thorax is clothed entirely with bronzy scales, except the scutellum, and all the upright forked scales are dark.

Locality and time of appearance same as the type, but a few days earlier, according to the dates on the specimens.

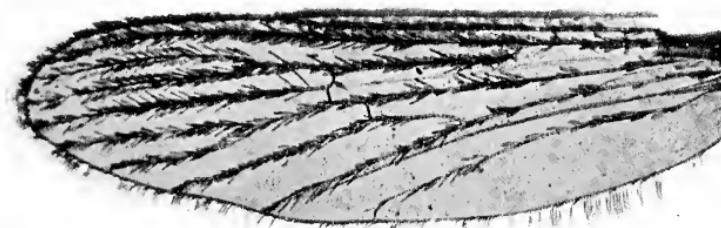


Fig. 145.

Wing of *Culicelsa accraensis*, var. *fusca*. ♀. n. sp.

From the markedly bronzy scaled thorax, thus differing from the type, I should place this as a distinct species but for the fact that one specimen shows many pale scales on the thorax

and is thus intermediate, but nevertheless has all the forked cephalic scales black.

CULICELSA NEOTAENIORHYNCHUS. nov. sp.

Thorax deep brown with bronzy scales and two paler spots; proboscis black with a white median band. Abdomen black with basal white bands. Legs black with very narrow pale banding, to some extent involving both sides of the joints.

♀. Head black, clothed with scanty dull golden and brown small narrow-curved scales and dense black upright forked scales; palpi black, white at apex; proboscis black with a prominent white median band; antennae deep brown, basal segment paler. Clypeus black.

Thorax black, with narrow-curved bronzy-black scales, two thin parallel rows of narrow-curved golden ones in front, becoming in some specimens spots near the middle, a few similar



Fig. 146.  
Wing of *Culicelsa neotaeniorhynchus*. ♀. n. sp.

scales at the sides and many before the scutellum; scutellum black with narrow-curved pale dull golden scales; metanotum deep bright brown; pleurae black with patches of flat ragged white scales.

Abdomen jet black with basal white bands; basal segment with a median black patch and long brown hairs with golden apices; posterior border-bristles brown with golden reflections; venter with broad basal white bands.

Legs black; base of under side of femora silvery; very narrow pale bands from the tibio-metatarsal joint down to the second and third tarsal joint; unguis all equal and simple, the hind more curved than the fore and the mid.

Wings densely brown scaled ; first fork-cell much longer and a little narrower than the second, its base nearer the base of the wing, its stem not half the length of the cell ; stem of the second fork-cell about two-thirds the length of the cell ; posterior cross-vein a little longer than the mid, sloping backwards, rather more than twice its own length distant.

*Length*.—5 mm.

♂. Palpi acuminate, black, with three white bands, the first two narrow and equal, the basal one broad and yellower ; hair tufts black ; palpi longer than the proboscis by the apical segment, the penultimate segment not as long as the apical ; apex pale. Antennae with brown plume hairs. Ungues of fore and mid legs unequal, uniserrate, hind equal and simple.



Fig. 147.  
Wing of *Culicelsa neotaeniorhynchus*. ♂. n. sp.

Wings densely brown scaled, the scales rather broader than in the female ; first fork-cell longer and narrower than the second, its base a little nearer the apex of the wing, its stem more than half the length of the cell ; stem of the second fork-cell not quite as long as the cell ; posterior cross-vein about twice its own length distant from the mid. Claspers normal, but the basal lobe has a large round apical projection, to which the clasper is attached.

*Length*.—5 mm.

*Habitat*.—Delagoa Bay, E. Africa (José F. Sant Anna).

*Observations*.—Described from four ♀'s and two ♂'s.

Very near *C. accraensis*, differing in the thoracic ornamentation, and possibly only a variety of that species both very near *C. taeniorhynchus*, Wied., from S. America, but the male genitalia very marked, and the banding of the legs is different.

*Type* in the British Museum.

**CULICELSA ALBOANNULATUS.** Macquart (1850).*Culex alboannulatus.* Macquart (1850).

Dipt. Exot. Supp. IV., 10 (1850), Macquart; Mono. Culicid. I., 389 (1901); III., 175 (1903); IV., 382 (1903), Theobald.

East Coast of Australia, N. S. Wales, Queensland.

**CULICELSA TOGOI.** Theobald (1907).

Mono. Culicid. IV., 379 (1907).

Osaka, Japan.

*Type* in the British Museum.

**CULICELSA AUROIDES.** Felt (1905).

N. Y. State Bull. 97, Ent. 24, N. Y. State Mus., 449 (1905), Felt; Mono. Culicid. IV., 380 (1907), Theobald.

Elizabethtown, New York, U.S.A.

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**GENUS CULISETA.** Felt (1904).\*

Bull. 79, Ent. 22, N. Y. State Mus., 391 (1904), Felt; Mono. Culicid. IV., 383 (1907), Theobald.

**CULISETA ABSOBRINA.** Felt (1904).

*Culex absobrinus.* Felt (1904).

Bull. 79, Ent. 22, N. Y. State Mus., 318 (1904), Felt; Mono. Culicid. IV., 383 (1907), Theobald.

Elizabethtown, Sarawac, New York.

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**GENUS CULEX.** Linnaeus (1758).

Linn. Syst. Nat. Ed. X. (1758), Linnaeus; Mono. Culicid. I., 326 (1901).

This genus still contains a great number of species, 194 being all apparently true *Culex*, taking *C. pipiens*, Linn., as the type of

\* I do not think this genus can be retained, except provisionally. Messrs. Dyar and Knab apparently accept the genus, and include two more species in it, *C. macrrackenae* and *C. dugesii*. (*Vide Appendix.*)

the genus, and 21 of doubtful position. Some of the latter it is impossible to identify from the brief descriptions. It has been impossible to work up anything like a complete table, but roughly the majority of banded legged species, etc., tabulate as follows :—

## A. Wings spotted.

Spots along costa like *Anopheles* ..... *mimeticus*. Noè.

## AA. Wings unspotted.

α. Proboscis banded (1 band).

β. Legs banded.

γ. Legs with tarsi basally banded.

δ. Abdomen with basal bands and often lateral basal spots.

ε. Thorax no special ornamentation.

ζ. Thorax with narrow-curved golden or golden-brown scales.

θ. Abdomen with lateral white spots as well as bands.

Leg bands yellow ; fork-cells rather small.

Large species ..... *microannulatus*.  
Theobald.

Similar, but fork-cells long ; small species ... *birói*. Theobald.

ζζ. Thorax deep brown and fawn-coloured scales forming a pale curved area on each side *gnophodes*.

Theobald.

δδ. Abdomen basally banded but no lateral spots.

Abdomen narrow basal yellow bands, last segments with apical and basal banding ; head with ochreous scales, no white flat lateral ones ; fore unguis ♀ equal and simple ; ♂ unequal, toothed ..... *vishnui*. Theobald.

Abdomen with narrow basal bands only ; hind legs with basal banding very faint, darker than *vishnui* ..... *annulus*. Theobald.

- Abdomen with narrow yellow basal bands only; no banding on hind tarsi; bases of fork-cells separate..... *sitiens*. Wiedemann.
- Mid and hind legs with broad yellow band involving both sides of tibio-metatarsal joint *impellens*. Walker.
- Hind tarsi with narrow basal bands. Venter abdomen dark, broad ochreous basal bands; femora and tibiae with rows of yellow spots... *taeniorhynchoides*. Giles.
- ee. Thorax with rich golden-brown narrow-curved scales; hind legs unbanded, others faintly... *thalassius*. Theobald.
- δ. Thorax brown and pale scaled, latter forming 2 small spots; fork-cells small ..... *alis*. Theobald.  
Near *alis* but larger ..... *ludlowi*. Blanchard.
- δδ. Abdomen with basal white bands, not complete on segments 5 and 6 and median white lateral spots ... *nocturnus*. Theobald.
- δδδ. Abdomen unbanded; lateral creamy yellow spot ..... *pseudoannulirostris*. n. sp.
- γγ. Legs basal white spots, not bands.  
Thorax dark brown; abdomen narrow, basal white bands and basal white lateral spots; venter mostly white ..... *portoricensis*. Ludlow.
- γγγ. Legs with femora and tibiae spotted also.  
Abdomen with apical silvery lateral spots. Thorax rich umber-brown, with irregular pale golden ornamentation ..... *neoapicalis*. Theobald.
- Abdomen with broad basal white bands; femora, tibiae and metatarsi mottled ..... *transvaalensis*. Theobald.

γγγγ. Tarsi with banding involving both sides  
of joints.

Thorax unadorned.

ζ. Abdomen banded apically.

Thorax with black scales; proboscis with additional pale  
band near apex ..... *infula*. Theobald.

ζζ. Abdomen with basal pale spots.

Abdomen with basal median  
triangular creamy spots and  
apical lateral ones.

Thorax with bronzy-brown and  
golden-brown curved scales,  
paler ones on each side of  
mesonotum ..... *annulioris*.

Theobald.

ζζζ. Abdomen with basal semicircular  
yellow patches, 2 to 4 bent in  
middle; white median lateral  
spots ( $\delta$ ) ..... *plumosus*. Theobald.

ζζζζ. Abdomen with lateral apical spots  
on 3rd segment, large spot 4th  
and 5th.

Thoracic scales ochreous and  
creamy, some black inter-  
mixed; femora and tibiae  
freckled ..... *par*. Newstead.

ζζζζζ. Abdomen banded basally.

Thorax golden scaled; proboscis  
of ♀ indistinctly, in ♂ dis-  
tinctly banded ..... *dissimilis*.

Theobald.

Similar to *dissimilis*, but pro-  
boscis broadly banded in both  
sexes ..... *salsus*. Theobald.

Thorax brown with 2 dark  
median parallel lines, pale  
dull golden scales with linear  
arrangement near *dissimilis*,  
but base of 1st fork-cell nearer  
base of wing ..... *anarmostus*.

Theobald.

Thorax adorned.

Abdomen with basal white bands  
and also bands at the apices  
of last 3 segments.

Thorax black with yellowish scales, with dorsal grey vittus, with white sub-median undulating line on each side ..... *tarsalis*.  
Coquillett.

Similar—legs spotted ..... *kelloggii*. Theobald.

Abdomen with basal median pale creamy or yellow patches.

Thorax with deep golden-brown scales and two pale scaled spots ..... *hirsutipalpis*.  
Theobald.

Thorax chestnut-brown with pale lateral creamy scales, which form 2 lateral inwardly projecting branches, half way across mesonotum ..... *corniger*. Theobald.

*aa.* Proboscis with 3 pale bands ..... *tritaeniorhynchus*. Giles.

*aaa.* Proboscis unbanded.

*s.* Legs basally banded.

*γ.* Thorax ornamented.

Thorax with 5 lines of pale golden grey scales on a deep brown ground.

Abdomen mostly grey scaled ..... *vittager*. Skuse.

Abdomen black with a white basal median area on 2nd segment, basal white bands on 3-6 and 6-7 with apical yellow bands, last 3 segments with median pale lateral spots ..... *pseudostenostrus*.  
n. sp.

Abdomen with basal pale bands and 2 dull yellow apical spots on 5th and 6th segments. Thorax with a broad median pale scaled area and 4 pale spots ..... *hirsutum*. Theobald.

Thorax brown with creamy, golden and black scales, creamy ones form a line on each side in front, golden scales and a median area in front, spaces between brown ..... *pleuristriatus*.  
Theobald.

Thorax brown with chestnut-brown and silvery scales; brown in middle with 2 narrow parallel silvery lines

in front formed by 2 narrow white scaled lines in front and by 2 narrow white scaled lines on each side of 2 bare parallel lines, a few forming a short indistinct third line between ; sides dense silvery-white..... *imitator.* Theobald.

Abdomen deep brown, 4 basal white bands. Thorax rich brown, paler in middle with grey curved patch on each side before wing roots ..... *stenoetrus.*  
Theobald.

γγ. Thorax not ornamented.

Thorax with narrow-curved scales.

δ. Abdomen with basal and apical banding; ♀ unguis 0.0-0.0-0.0.  
Legs narrowly banded; basal abdominal bands bent in in middle, last 2 segments with apical bands also ..... *sylvestris.* Theobald.

Legs with 1st tarsal only with pale band; abdominal banding mostly basal with traces of pale apical scales ..... *testaceus.*  
V. d. Wulp.

δδ. Abdomen basally banded.

Thorax clear brown, with golden-brown curved hair-like scales; legs brown with yellowish reflections and broad basal pale bands..... *vagans.* Wiedemann.

Thorax black, with dark brown and golden curved scales, unguis simple and equal in ♀; bases of fork-cells level, small size (3.8 mm.)..... *procax.* Skuse.

Thorax rich chestnut-brown with narrow-curved golden scales and some dark ones; last hind tarsal dull white ... *quasirubithorax.*  
n. sp.

Thorax bright chestnut-brown, with narrow-curved golden scales and 4 rows black bristles. Abdomen with regular white bands; ♀ unguis 1.1-1.1-0.6..... *rubithorax.*  
Macquart.

- Thorax with 3 rows of bristles ;  
abdomen with curved basal  
white bands and basal white  
spots..... *occidentalis.*  
Skuse.
- δδδ. Abdomen with basal and apical  
banding and a median yel-  
lowish-grey line..... *maculiventris.*  
Macquart.
- δδδδ. Abdomen with bands on some  
segments only.  
Bands on 2nd and 3rd segments,  
basal lateral white spots dis-  
tinct..... *imprimens.*  
Walker.
- δδδδδ. Abdomen unbanded, with white  
lateral spots.  
Tarsi black, with honey coloured  
joints ; first joint with yellow  
cilia ; thorax black with grey  
tomentum ..... *tibialis.* Robin-  
eau-Desvoidy.
- ββ. Legs with tarsi apically banded ..... *camptorhynchus*  
Thomson.
- βββ. Legs basally and apically pale banded.  
A. Abdomen not banded, but with pale  
basal patches.  
Abdomen with white lateral basal  
patches, unguis ♀ 1.1-1.1-0.0..... *canadensis.*  
Theobald.
- Abdomen with curved median basal  
patches, almost bands ; unguis of  
♀ 0.0-0.0-0.0 ..... *cingulatus.*  
Fabricius.
- Abdomen of ♀ unbanded with small  
basal white lateral spots ; unguis  
0.0-0.0-0.0. ..... *janitor.* Theo-  
bald.
- AA. Abdomen with basal pale bands.  
Abdomen with 2 grey median spots  
to segments as well almost joining  
with the bands..... *pettigrewii.*  
Theobald.
- Abdomen brown with apical black  
bands..... *arabiensis.*  
Patton.
- Fore and mid legs unbanded : thorax  
dark brown with pale golden-brown  
scales and 2 parallel bare median  
lines in front ..... *secutor.* Theo-  
bald.
- Similar but 2 pale spots on thorax... *quasiselector.*  
Theobald.

*ββββ.* Last hind tarsal white.

Last two tarsals of all legs white;  
most marked in hind legs..... *longipalpis*.  
V. d. Wulp.

Last two tarsals of hind legs white... *albipes*. Lutz.  
Abdomen narrow basal white bands *niveitarsis*.  
Coquillett.

*βββββ.* Legs with femora and tibiae spotted or  
lined, lines on femora and tibiae ..... *theileri*. Theobald.  
One white line on legs only..... *creticus*. Theobald.

*ββββββ.* Legs banded at apex of tibiae, tarsi un-  
banded; ungues of ♀ simple..... *univittatus*.  
Theobald.  
Ungues of ♀ serrated..... *quasiunivitta-  
tus*. Theobald.

#### CULEX MIMETICUS. Noë (1899).

*Taeniorhynchus mimeticus*. Noë—Giles.

Boll. d. Soc. Ent. Ital. XXXI., 240 (1899), Noë; Mono. Culicid. I., 329 (1901); Rec. Ind. Mus. II., pt. iii., No. 30, 297 (1908), Theobald.

Italy; Punjab, India.

*Additional localities.*—Lushai Hills, Assam (E. C. Macleod), 1. vi. 04, 1 ♀ in Indian Museum, Calcutta; Peradeniya, Ceylon, 1 ♀ and 1 ♂, 17. ix. 07 in garden tubs (E. Green); West Lake, Hangchow, China 1 ♀, v. 09 (C. E. Cornford).

#### CULEX MICROANNULATUS. Theobald (1901).

*Culex rolandi*. D'Em. d. Ch. (1908).

Mono. Culicid. I., 353 (1901), Theobald; Canad. Ent. XXXVI., 299 (1904), Ludlow; Gen. Ins. Culicid. 25 (1905), Theobald; Phil. Journ. Sci. I., 9, 988 (1905), Banks; Mosq. Philip. Isls. 9 (1908), Ludlow; Rec. Ind. Mus. II., pt. iii., No. 30, 297 (1908), Theobald; Ann. Trop. Med. and Par. II., No. 3, 259 (1908), D'Emmerez de Charmoy (= *rolandi*).

India and Ceylon.

*Additional localities.*—Pangasinan, Camp Gregg, Bayambang, P. I. (W. P. Chamberlain); Cavite, Cañacao, P. I. (E. R. Stitt); Manila P. I. (Banks); Calcutta; Purneah, N. Bengal; Gopkuda Island, Lake Chilka, Ganjam; Sylhet, Assam; between Bolpore and Rampore Haut, E. I. Railway, Bengal; Mauritius

(D'Emmerez de Charmoy); Trincomalee and Hakgala, Ceylon, 31 specimens, from 24. vii. to 9. x. 07 (E. Green).

*Time of capture.*—July, August, September, October and November in Calcutta; August at Purneah; August, Lake Chilka; January, February, April and May, November and December at Sylhet.

*Observations.*—The type of *rolandi* is in the University Museum, Liverpool. I have examined it and cannot see any reasons for separating it from this species.

In referring to *rolandi* D'Emmerez de Charmoy says, "Not common, the larvae found at Iron Fanfaron. The larvae can be easily differentiated from those of the other species of the island (Mauritius) by the very long syphon." Under the description of the species is said, "Found in the larval stage by Major P. Fowler in the broad moat outside Fanfaron Bastian in December 1907 and January 1908. Ground marshy water from few inches to one foot deep, with much coarse grass. The larvae occurred in association with numbers of *P. costalis*."

*Type* in the British Museum.

#### CULEX BIRÓI. Theobald (1905).

Ann. Mus. Nat. Hung. III., 82 (1905); Mono. Culicid. IV., 390 (1907),  
Theobald.

Bombay.

*Type* in the National Museum, Budapest.

#### CULEX GNOPHODES. Theobald (1903).

Mono. Culicid. III., 163 (1903).

Dindings, Straits Settlements.

*Type* in the British Museum.

#### CULEX VISHNUI. Theobald.

Rec. Ind. Mus. II., pt. iii., No. 30, 297 (1908), Theobald.

Ceylon; Madras; Quilon, Travancore; Philippine Islands.

*Additional localities.*—Sylhet, Assam (Major Hall); Port Canning, Lower Bengal; Gopkuda Island, Lake Chilka, Ganjam; Ferozepore district, Punjab, India 1 ♀ (Major Adie).

*Time of capture.*—January and February at Sylhet; July at Port Canning; August at Gopkuda Island.

*Type* in the British Museum.

**CULEX ANNULUS.** Theobald (1901).

Mono. Culicid. I., 358 (1901).

Lamma; Tai Po; Pokfulam, Hong Kong.

*Type* in the British Museum.

**CULEX SITIENS.** Wiedemann (1828).

Ausseurop. Zweiflüg. Ins. 54 (1828), Wiedemann; Mono. Culicid. I., 360 (1901), Theobald; Mosq. Philip. Isls. 9 (1908), Ludlow; Rec. Ind. Mus. II., pt. iii., No. 30, 298 (1908), Theobald.

Sumatra; Taipang, Perak.

*Additional localities.*—Philippine Islands (Ludlow); Calcutta (in Ind. Mus. Col. Calcutta).

*Time of capture.*—August and September in Calcutta.

**CULEX IMPELLENS.** Walker (1860).

Proc. Linn. Soc. Lond. IV., 91 (1860), Walker; Mono. Culicid. I., 362 (1901), Theobald; III., 161 (1903), Theobald; Journ. Trop. Med. VII., 368 (1904), Giles; Gen. Ins. Culicid. 25 (1905), Theobald; Phil. Journ. Sci. I., 9, 987 (1906), Banks.

For old localities, *vide* Vol. I. and III.

*Additional localities.*—Pampanga, Camp Stotsenberg, Angeles, P. I. (E. R. Whitmore). Calcutta, 31. i. 08; 5 and 7. iii. 07, N.A.; 3. vi. 08; 12. vii. 08; 21. vii. 08 (2); 27. vii. 07 (21); 28. vii. 07 (4); 30. vii. 07 (4); 31. vii. 07 (8); 2. viii. 07 (1); 3 and 4. viii. 07 (10); 5. viii. 07 (34); 6. viii. 07 (1); 10. viii. 07 (4); 13. viii. 08; 14. viii. 08, in bungalow (2); 18. viii. 08; 22. viii. 08, "in bathroom" (Annandale); 19. ix. 07, N.A. (1); 26. ix. 08; Ballygany, Calcutta, 20. vi. 08 (3) (T. Bentham); Lucknow, 21. iv. 07 (1), N.A.; Sukna, 500 feet E. Himalayas, 1 and 2. vii. 08 (5), in deep jungle, biting by day; Moulmein, L. Burma, 27. ii. 08, abundant in house; Thamarpur, Nepal, 10–20. ii. 08; at light on board ship, 5 miles off Alleppey, Malabar coast, 4. vii. 08 (C. Paiva) (2); Sukhwani, Nepal, 15–16. ii. 08; Purneah, N. Bengal, 6. viii. 07 (C. Paiva); Rajmahal, Bengal, 31. vii. 07 (2); Bettiah, Cram-

paran, Bengal, 7. iii. 08; Rangoon, Burma, 24 and 25. ii. 08 (N.A.); Mandalay, N. Burma, 11 and 12. iii. 08 (N.A.); Balighai, near Puri, Orissa, 26. x. 08 (8); 25. x. 08 (3); 24. x. 08 (2), "in house, bites occasionally by day"; 23. x. 08 (6), "in house, comes to light"; Shencottah, Madras Frontier, E. side of W. Ghats, Travancore, 25. xi. 08 (4) (Annandale); Port Canning, Lower Bengal, 9. x. 08 (N.A.); Pallode, 20 miles N.E. of Trivandrum, Travancore, 15. xi. 08 (N.A.); Ernakulam, Cochin State, Malabar, 4. xi. 08 (N.A.); Shasthancottah, 12 miles N.N.E. of Quilon, Travancore, 6. xi. 08, 7. xi. 08 (2); 8. vi. 08 (2); Trivandrum, Travancore, 12. xi. 08 (3); 13. xi. 08 & 14. xi. 08 (2); Nedumangad, 10 miles N.E. of Trivandrum, Travancore, 14. xi. 08 (2) (Annandale); Yaikan, Coastal Region, Travancore, 5. xi. 08; Kulattupuzha, W. base, W. Ghats, Travancore, 19. xi. 08 (Annandale); Tenmalai, W. Ghats, W. side, Travancore, 22. xi. 08 (Annandale); Bhogaon, 3. x. 08 (2); 7. x. 08 (3); 6. x. 08 (1); Chittagong, E. Bengal, 26. vii. 00 (Lt.-Col. Hall).

**CULEX TAENIORHYNCHOIDES.** Giles (1904).

Journ. of Trop. Med., p. 369, Dec. 1, 1904.

"Wing dark, unspotted. Tarsi barely perceptible basally yellow-banded on some of the distal joints, but not on the first tarsals. Thorax sooty grounded, with bronzy-golden curved scales in front and dense tufts of black scales and bristles behind over the roots of the wings. Abdomen sooty, with barely visible ochreous basal bands. Proboscis black, with a sharply defined ochreous band on the middle.

♀. Palpi black. Head clothed with black forked scales and dark ochreous narrow-curved, with a golden spot on the lateral flat-scaled areas. Pleurae mainly dark. Femora and tibiae with rows of yellow specks. Abdomen quite without pale lateral spots. Venter dark, with broad ochreous basal bands.

A rather large species.

*Habitat.*—Benguela, Angola."

*Type* in the British Museum.

**CULEX THALASSIUS.** Theobald (1903).

Mono. Culicid. III., 168 (1903).

Gambia.

*Type* in the British Museum.

## CULEX ALIS. Theobald (1903).

Mono. Culicid. III., 167, Theobald; Mosq. Philip. Isls. 9 (1908), Ludlow.

Christmas Island.

*Additional locality*.—Philippine Islands (Ludlow).

*Type* in the British Museum.

## CULEX LUDLOWI. Blanchard. nov. nom.

*Culex annuliferus*. Ludlow (1903).

*Culex annulifera*. Ludlow (1903).

Journ. N. York Ent. Soc. II., 141 (1903), Ludlow; Canad. Ent. XXXVI., 72 (1904), Ludlow; ibid. XXXVI., 299 (1904), Ludlow; Mono. Culicid. IV., 388 (1907), Theobald; Phil. Journ. Sci. I., 9, 986 (1906), Banks; Mosq. Philip. Isls. 10 (1908), Ludlow.

Mangarin and Dagupan, Philippine Islands.

*Additional locality*.—Pangasinan, Camp Gregg, Bayamtang, P. I. (W. P. Chamberlain).

## CULEX NOCTURNUS. Theobald (1903).

Mono. Culicid. III., 159 (1903).

Fiji.

*Type* in the British Museum.

## CULEX PSEUDOANNULIORIS. nov. sp.

Head dull ochraceous with a dark patch on each side; proboscis black with a median creamy band. Thorax brown, somewhat ornamented with brown and dull ochreous scales. Abdomen unbandied, with indistinct, pale creamy, lateral, basal areas; venter with basal creamy bands to the segments. Legs brown, with narrow basal dull yellow bands.

♀. Head deep brown with narrow-curved pale golden scales and flat pale lateral ones, upright forked scales deep brown; chaetae brown except between the eyes, where they are golden; clypeus brown; palpi black with black chaetae; proboscis black with a pale median band; antennae very dark brown.

Thorax deep brown with narrow-curved, dull, pale golden and brown scales, paler in front of the roots of the wings, the chaetae brown; scutellum brown with narrow-curved, pale golden scales and ten brown border-bristles to the mid lobe; metanotum deep brown; pleurae brown with patches of pale creamy flat scales.

Abdomen unbanded, deep blackish-brown with lateral creamy scales, which to some extent form apical spots above; venter with basal creamy bands.

Legs deep brown, apex of femora with a few yellow scales, base of metatarsi and first three tarsals with a narrow yellow band, a few pale scales spreading on to the apices of the segments; apex of hind tibiae with a number of outstanding small golden chaetae, some larger black ones at the apex, and a few pale scales; unguis equal and simple.

Wings with the fork-cells rather long and narrow, the first considerably longer and a little narrower than the second, their bases level; stem of the first about one-third the length of the cell; stem of the second less than half the length of the cell;



Fig. 148.  
Wing of *Culex pseudoannulioris*. ♀. n. sp.

posterior cross-vein longer than the mid, about its own length distant from it.

*Length.*—7·5 to 8 mm.

*Habitat.*—Obuasi, Ashanti (Dr. Graham).

*Time of capture.*—12. x. 07; 8. xi. 07; 25. viii. 07; 29. ix. 07.

*Observations.*—Three ♀'s caught in bush at 2 and 6 P.M., one in house at 9 P.M. A very pronounced banded proboscis species, coming near *C. annulioris*, Theobald.

*Type* in the British Museum.

**CULEX PORTORICENSIS.** Ludlow (1905).

Canad. Entomo. XXXVII., 386 (1905), Ludlow.

“ Head dark, with a narrow median line of ochraceous curved scales, light forked scales upon the occiput, and reaching well up toward the vertex; the median curved scales followed by light flat scales and a narrow stripe of dark flat scales on the side; antennae dark brown, verticels and pubescence brown, basal

joint brown, with a few flat lighter brown scales; palpi dark brown, a few white scales at the tips; proboscis very long, dark brown, with a minute white band, at times merely a trace, near the middle; clypeus dark brown; eyes brown and garnet.

Thorax dark brown; prothoracic lobes with light spindle-shaped scales; mesonotum sparsely covered with small, slender curved golden-brown scales on the sides, the median portion partly denuded, but some dark brown spindle-shaped scales remaining; scutellum dark, with light, slender curved scales; pleura dark brown, with numerous small patches of flat white scales; metanotum dark brown.

Abdomen dark, covered with dark brown scales; very narrow basal white bands, and small basal white lateral spots; venter mostly white scaled.

Legs: coxae and trochanters dark, with light scales; femora dark brown dorsally, almost white ventrally, more markedly so on the hind legs; tibiae brown, as are all the remaining joints, but on the hind legs the metatarsi, the first, second, third and sometimes the fourth tarsal joints have minute basal white spots, not amounting to bands; on the mid legs the spots appear on the metatarsi, first and second tarsal joints, and on the fore legs there are minute yellowish spots at the tips of the tibiae, and base and apex of the metatarsi, the remaining joints being brown. Fore and mid unguis uniserrate.

Wings brown, with brown scales; cells rather short; the first sub-marginal a little longer and narrower than the second posterior cell, the stem of each about two-thirds as long as the cells, the bases nearly in a line; the cross-veins are all nearly the same length, mid and supernumerary meet, and the posterior cross-vein is distant about its own length from the mid; halteres have light stem and fuscous knob.

The male greatly resembles the female; the palpi are long, with golden-brown plumes, and four narrow white bands; fore and mid unguis biserrate.

*Length.*—3·5 to 4 mm.

Taken Aug. 15, 1905.

*Habitat.*—San Juan, Porto Rico.

Described from several specimens sent by Dr. L. G. de Quevada, Surg. U.S.A., which were taken at the Quarantine Station, Yellow Fever Hospital and Quarters; it at first glance suggests *C. taeniorhynchus* minus the hind legs, and probably lies near that, but is evidently distinct."

## CULEX NEOAPICALIS. nov. nom.

*Culex apicalis.* Theobald (1903) (non Adams 1903).

Mono. Culicid. III., 171 (1903).

São Paulo and Para, Brazil.

*Type* in the British Museum.

## CULEX TRANSVAALENSIS. Theobald (1903).

Mono. Culicid. III., 165 (1903).

Pretoria.

*Additional localities.*—Katemas River, Bihé, Angola, 2, 3. ii. 05, 10 A.M., three ♀'s; Bihé, 3. ii. 05, Sylvan, two ♀'s.

*Type* in the British Museum.

## CULEX INFULA. Theobald (1901).

Mono. Culicid. I., 370 (1901).

Taipang, Perak, Malay States.

*Type* in the British Museum.

## CULEX ANNULIORIS. Theobald (1901).

Rep. V., Mem. and App., Thomson Yates, Lab.; Mono. Culicid. I., 371 (1901); III., 163 (1903); Ann. Trop. Med. and Par. II., No. 3, 262 (1908); D'Emmerez de Charmoy; Mosq. Philip. Isls. 9 (1908), Ludlow.

Salisbury, Mashonaland; Pretoria, Transvaal.



Fig. 149.  
*Culex annulioris.* ♂. Theobald.  
Head.

*Additional localities.*—Kei Road, King William's Town (20. ii. 07), C. G. H.; Stellenbosch (19 and 20. i. 07), C. G. H. (per C. Lounsbury); Voco, Mauritius (D'Emmerez de Charmoy), specimen taken by Colonel Peterkin; Philippine Islands (Ludlow); Bihé, 24. iii. 05 (on window in house at sunset); Katemas, Bihé, 3. ii. 05 (bred from pupa 10 A.M.), found on pool near village laying eggs 5 P.M. 2. iv. 05.

*Type* in the British Museum.

**CULEX PLUMOSUS.** Theobald (1901).

? ♂ of *C. annulioris*. Theobald (1901).

Mono. Culic. I., 373 (1901).

Salisbury, Mashonaland.

*Type* in the British Museum.

**CULEX PAR.** Newstead (1907).

Ann. Trop. Med. and Parasit., I., No. 1, 25 (1907).

" Head and thorax grey. Abdomen dark brown; fourth and fifth segments with lateral apical spots; venter greyish, dark brown basally. Legs brown; femora and tibiae freckled, the former much more so than the latter; anterior and mid tarsi with three narrow pale bands at the articulations. Proboscis with a broad median band.

♀. Head with the narrow-curved scales creamy-white; upright forked ones pale ochreous, with a few very dark brown ones at the sides; flat scales few in number, creamy-white. Palpi short, apical segment minute, clothed with dark brown scales. Proboscis dark bronzy-brown with a broad median creamy-white band; labella paler.

Thorax dark brown; scales chiefly pale ochreous and creamy-white with a few black ones intermixed posteriorly and on the scutellum, the black ones predominate; there are also indications of four small equidistant black spots.

Abdomen clothed with very dark brown almost black scales; a few isolated dull creamy-white ones on the first and second segment, a small lateral apical spot on the third, a large spot on the fourth and fifth; remaining segments rubbed; venter with a pale median line; last two segments with dull white basal bands, very pronounced on the penultimate segment; the remaining basal segments are not sufficiently clear to determine.

Legs uniformly pale brown or ochreous-brown ; knee spots faintly indicated ; femora and tibiae with pale freckles ; articulations of front and middle tarsi with three narrow pale bands ; hind tibiae somewhat paler than the rest.

Wings with pale and somewhat metallic-brown scales ; fork-cells with their bases almost opposite ; posterior cross-vein about one and a fourth times its length from the mid.

*Habitat*.—Tshumbri, Congo Free State.

*Observations*.—Described from one ♀ taken July 5. Allied to *C. thallasius*, Theobald, but differs in the absence of abdominal bands, the broader band to the proboscis, the predominating pale upright forked scales of the head, and also in the colour of the thoracic scales."

*Type* in the collection of the School of Tropical Medicine, Liverpool.

*CULEX DISSIMILIS*. Theobald (1901).

Mono. Culicid. I., 376 (1901).

Freetown, Sierra Leone.

*Type* in the British Museum.

*CULEX SALSUS*. Theobald (1909).

Third Rep. Gord. Coll., p. 258 (1909), Theobald.

Thorax deep brown clothed with rather scanty pale dull creamy scales, somewhat lighter in places ; pleurae clear white. Head with similar scales to the thorax ; proboscis black with a prominent whitish median band. Abdomen deep blackish-brown with broad basal white bands with dark scales here and there giving a mottled appearance. Legs with narrow apical and basal pale banding.

♀. Head deep brown with narrow-curved pale creamy scales ; flat creamy lateral ones and six short pale bristles projecting forwards ; antennae black, basal lobes deep blackish-brown ; clypeus black ; proboscis black with a broad pale creamy-white to white median band ; eyes silvery.

Thorax deep brown with rather scanty pale dull creamy scales, somewhat darker in two patches in front, and paler in front of the roots of the wings ; chaetae apparently scanty, deep brown ; scutellum brown with narrow pale scales and six brown posterior border-bristles to the mid lobe ; metanotum brown with

grey reflections ; pleurae pallid greyish-white somewhat pellucid with some pale creamy scales.

Abdomen deep blackish-brown with broad basal white scaled bands which just extend on to the apices of the preceding segments and which have a few dark scales scattered over them ; the first segment pale brown with a few dark scales and fine silk-like pale hairs ; posterior border-bristles pale ; last segment mostly pale scaled ; venter with still broader pale basal bands and even white scales dotted over the narrow dark apices.

Legs brown, pale at their base, coxae almost silvery-white ; a pale knee spot and a few paler scales on the femora ; apex of tibiae pale and base of metatarsi in the hind legs, a trace in the mid, none in the fore ; narrow pale bands to some of the tarsal

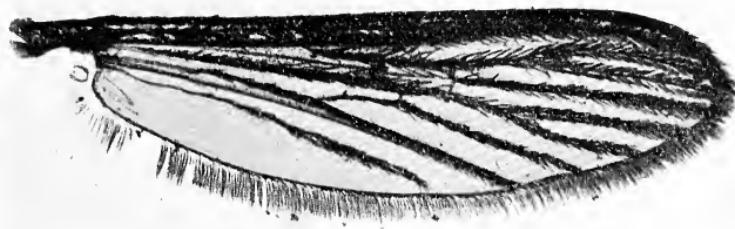


Fig. 150.  
Wing of *Culex salsus*. ♀. Theobald.

joints, involving both sides of the joints most prominent on the hind legs ; unguis equal and simple.

Wings with dense scales on the branches of the second and fourth veins and third and apices of the others, rather broader than in *Culex* (sen. st.) ; fork-cells moderately long ; the first submarginal longer and slightly narrower than the second posterior cell ; its base very slightly nearer the apex of the wing than that of the second posterior cell, its stem a little less than half the length of the cell ; stem of the second posterior slightly less than half the length of the cell ; posterior cross-vein more than three times its own length distant from the mid.

*Length*.—4·5 to 5 mm.

♂. Palpi longer than the proboscis by nearly the whole of the apical segment ; acuminate, last two segments of nearly equal length, the apical slightly the longer ; hair tufts scanty and short, dark ; a basal pale band to both the last segments ; the ante-penultimate with two broad pale bands ; proboscis broadly

pale banded, a group of long fine hairs below in the middle and another at the base. Wings with the fork-cells short, the first



Fig. 151.  
*Culex salsus.* ♂. Theobald.  
Palpi and proboscis.

sub-marginal longer and much narrower than the second posterior, which is conically triangular in form ; stem of the first fork-cell



Fig. 152.  
Wing of *Culex salsus.* ♂. Theobald.

nearly two-thirds the length of the cell ; stem of the second fork-cell also nearly two-thirds the length of the cell ; posterior

used the name *affinis* in 1825. *Culex pens* is only Coquillett's *tarsalis*. If this species has spotted legs (not mentioned by Coquillett) then it is possible my *kellogii* is a synonym.

**CULEX KELLOGGII.** Theobald (1903).

Canad. Entomo. XXXV., No. 8, 211 (1903); Mono. Culicid. IV., 391 (1907).

Jamaica; United States.

*Type* in the British Museum.

*Note*.—Some Americans say this is the same as Coquillett's *C. tarsalis*.

**CULEX HIRSUTIPALPIS.** Theobald (1901).

Mono. Culicid. I., 378 (1901).

Salisbury, Mashonaland.

*Additional localities*.—Bihé, Angola, W. Africa (Dr. Creighton Wellman), six ♀'s; 5. ii. and 2. iv. 05; Transvaal (Simpson).

*Observations*.—The Angola specimens were taken in a house, and others bred out from larvae from near village on edge of marsh at Bihé.

*Type* in the British Museum.

**CULEX CORNIGER.** Theobald (1903).

Mono. Culicid. III., 173 (1903); IV., 415 (1907).

Santos, Brazil.

*Type* in the British Museum.

**CULEX TRITAENIORHYNCHUS.** Giles (1901).

Entomologist, 192 (1901), Giles; Mono. Culicid. I., 364 (1901), Theobald.

India.

*Type* in the British Museum.

**CULEX VITTAGER.** Skuse (1889).

Proc. Linn. Soc. N. S. Wales, 1728 (1889), Skuse; Mono. Culicid. I., 387 (1901); III., 174 (1903), Theobald.

N. S. Wales; Queensland.

*Type* in the Museum, Sydney, N. S. Wales.

cross-vein more than twice its own length distant from the mid. Genitalia with the claspers rather broad and sickle shaped.

*Length.*—4·5 to 5 mm.

*Habitat.*—Port Sudan (H. King).

*Observations.*—Described from two pinned females and micro-preparations of the male. It is a very distinct species coming in the *sitiens* group, easily told by the broad basal abdominal white bands with a few scattered black scales on them, the whitish pleurae and banded proboscis and black antennae.

The somewhat broad lateral vein scales of this and the allied species such as *sitiens*, *vishnui*, *annulirostris*, *alis*, etc., and their general uniform appearance and banded proboscis make it probable that they should be placed in a genus to themselves. *Culex salsus* has not been taken at Port Sudan anywhere but in one place, namely, a tub sunk in a salt water pool.

The specimens were all taken by the resident doctor at the Port.

*Type* in the British Museum.

#### CULEX ANARMOSTUS. Theobald (1903).

Mono. Culicid. III., 170 (1903).

Gambia ; Free Town.

*Type* in the British Museum.

#### CULEX TARSALIS. Coquillett (1896).

*Culex willistoni.* Giles (1900).

*Culex affinis.* Adams (1903).

*Culex pens.* Speiser (1904) nov. nom. for *affinis*.

Canad. Entomo. 43 (1896), Coquillett ; Mono. Culicid. IV., 394 (1907), Theobald ; Ins. Borse. 148 (1904), Speiser.

United States.

Speiser re-named *Culex affinis*, Adams, *Culex pens*, as Stephens



Fig. 153.

*Culex salsus.* ♂. Theobald.  
Genitalia.

## CULEX PSEUDOSTENOETRUS. nov. sp.

Head golden-brown with lateral black and white spots; palpi black; proboscis black. Thorax rich brown with paler, almost golden, scales in the mid line in front two pale median spots, some in front of the roots of the wings and some behind. Abdomen black with a white basal median area on the second segment, basal white bands on the third to sixth and the sixth and seventh with apical yellow bands, the last three segments with median pale lateral spots. Legs black with basal pale bands.

♀. Head black with narrow-curved pale golden to almost creamy scales, much smaller and more golden brown in front between the eyes, deep brown almost black upright forked scales, flat black scales at the sides with a median white patch, deep brown chaetae form an inwardly projecting row on each side over the eyes; pale golden chaetae between the eyes; palpi and proboscis black; antennae deep brown, basal segments paler, the basal one with some small flat pale creamy scales.

Thorax deep rich brown, clothed with small curved golden-brown to bronzy scales, and with somewhat paler scales in the mid region in front, two paler scaled median spots, some paler scales along the sides most prominent before the base of the wings and paler ones before and on each side of the bare space in front of the scutellum; chaetae deep brown; scutellum brown with narrow-curved pale almost creamy scales and nine or more posterior border-bristles to the mid lobe; metanotum deep brown; pleurae deep blackish-brown with patches of flat white scales and pallid hairs.

Abdomen black, basal segment with a few pale basal scales in the middle, brown hairs with pale reflections; second segment with a median basal creamy-white spot, third to sixth with prominent basal white bands, the sixth and seventh with prominent yellow apical bands; the fourth with a basal lateral white spot, fifth to seventh with *median* lateral white spots, the last almost creamy-yellow; venter mostly pale creamy-yellow.

Legs deep brown, femora and tibiae speckled with a few paler scales, under side of femora pale, a pale knee-spot and pale apex to the tibiae; first and second fore tarsals with basal white bands, a trace on the base of the metatarsi, in

the mid legs all the segments with basal white bands, also the hind in which the banding is broader; unges all equal and uniserrate.

Wings with the first fork-cell much longer and slightly narrower than the second fork-cell, its base a little nearer the base of the wing, its stem about one-half the length of the cell, stem of the second fork-cell nearly as long as the cell, cross-veins

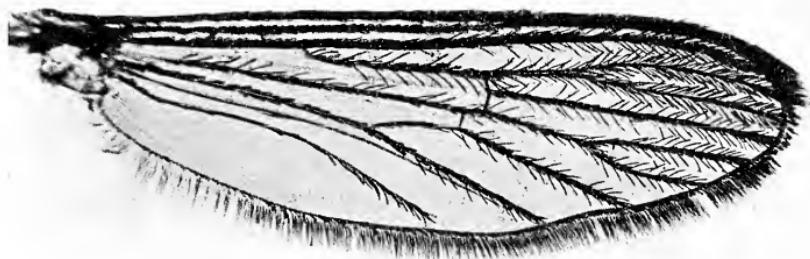


Fig. 154.  
Wing of *Culex pseudostenostrus*. ♀. n. sp.

long, the posterior and mid about equal, the former about its own length distant from the mid; lateral vein scales long and thin, dense on the apical area of wing.

*Length*.—5 mm.

*Habitat*.—Hakgala, Ceylon (Green).

*Time of capture*.—v. 07 and viii. 07.

*Observations*.—Described from two ♀'s. It comes very near *Culex stenostrus*, Theob., but differs in (i) no pale apex to the palpi, (ii) in the markedly different abdominal ornamentation, and (iii) in the venation.

#### CULEX HIRSUTUM. Theobald (1901).

Mono. Culicid. I., 392 (1901), Theobald; Mosq. Philip. Isl. 9 (1908), Ludlow.

Salisbury, Mashonaland.

*Additional localities*.—Philippine Islands (Ludlow); Transvaal.

*Type* in the British Museum.

**CULEX PLEURISTRIATUS.** Theobald (1903).

Mono. Culicid. III., 177 (1903).

São Paulo, Brazil.

Type in the British Museum.

**CULEX IMITATOR.** Theobald (1903).

Mono. Culicid. III., 175 (1903), Theobald; Os Culicideos do Brazil,  
Peryassu (1909).

Brazil.

Type in the British Museum.

The larva and pupa are figured in Peryassu.

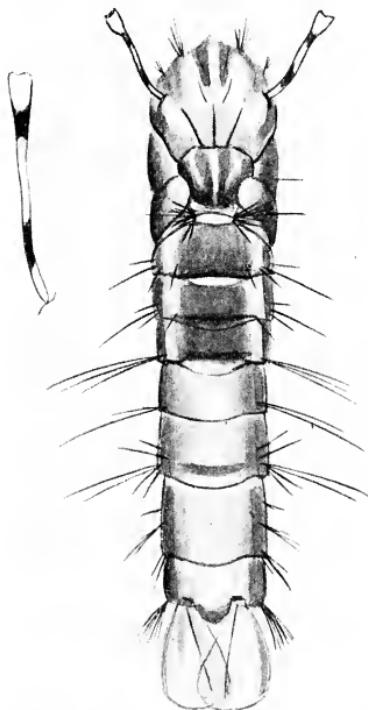


Fig. 155.  
Pupa of *Culex imitator* (after Silva).

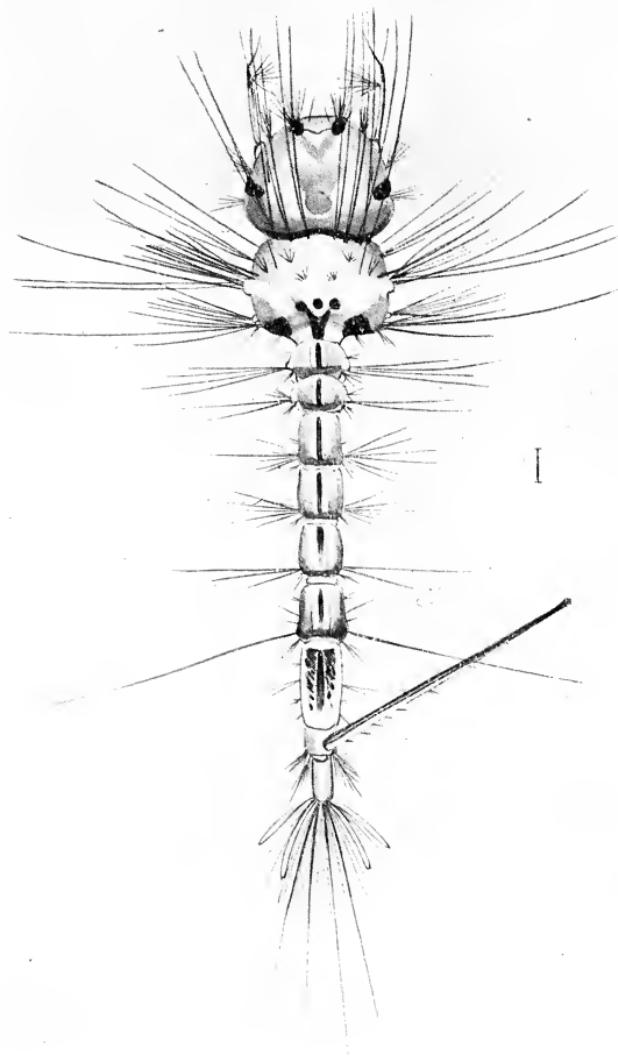


Fig. 156.  
Larva of *Culex imitator* (after Silva).

**CULEX STENOETRUS.** Theobald (1907).

Mono. Culicid. IV., 395 (1907).

Maskeliya, Ceylon.

*Type* in the British Museum.

**CULEX SYLVESTRIS.** Theobald (1901).

*Culex montcalmi.* Blanchard (1903).

Mono. Culicid. I., 406 (1901).

Canada.

*Additional localities.*—Boston Harbour, Mass. ; Fort Etham Ateen, Ver. ; Huntingdon, Term. Fort, Leavenworth, Kan. ; Fort Mackenzie, Wyo. ; Montana ; New York ; Sequoia Nat. Park, Cal. ; Westlawn Cemetery, Ohio ; Fort Duchesne, Utah ; Fort Hancock, Ill. ; Jeffersson Barracks, Mo. ; Fort Lincoln, N.D. ; Fort Snelling, Miss. ; Virginia ; Fort Williams, Me. ; Washington Barracks, D.C., U.S.A. (Ludlow).

*Type* in the British Museum.

**CULEX TESTACEUS.** Van der Wulp (1867).

Tijdschr. voor Ent. 128 (1867), Van der Wulp ; Mono. Culicid. I., 409 (1901), Theobald.

Westshore, Lake Simcoe, Ontario, Canada ; Wisconsin, U.S.A., etc.

**CULEX VAGANS.** Wiedemann (1828).

Auss. Europ. Zweiflüg. Ins., p. 545 (1828), Wiedemann ; Mono. Culicid. I., 411 (1901), Theobald ; Phil. Jour. Sci. I., 9, 988 (1906), Banks.

♂. Head brown with pale scales ; palpi longer than proboscis by about the apical segment, which is slightly shorter than the penultimate, deep brown, the last two segments with bright basal creamy bands and flaxen-brown and brown hair tufts, long on the inner side of the penultimate segment and a long dark tuft on the apex of the ante-penultimate, which is swollen, two other broad pale bands below. Antennae brown with pale internodes and flaxen brown plume hairs.

Thorax deep, rich brown with small narrow-curved golden brown scales ; scutellum with paler narrow-curved scales, larger in size, with brown border-bristles ; metanotum brown.

Abdomen deep brown, almost black, with basal white bands ; hairy, hairs pale brown ; basal lobes of genitalia very hairy, claspers broadish with a large spine on each side near apex giving a bifurcate appearance and with dense fine hairs all along the outer edge.

Legs deep brown, paler at the base with basal pale bands ; unguis of fore and mid pairs unequal, uniserrate, the mid pair large (hind ? uniserrate).

Wings with rather short fork-cells, the first longer and narrower than the second which is rather broad, their bases about level, the stems nearly as long as the cells; mid cross-vein about twice as long as the supernumerary and in a straight line with it; posterior cross-vein about the same length as the mid about its own length distant from it.

*Length.*—5·2 mm.

*Habitat.*—Madras Town (Madras); Hong Kong; Shanghai; China (Wiedemann).

*Additional locality.*—Pampanga, Camp Stotsenberg, Angeles, P. I. (E. R. Whitmore).

*Time of capture.*—31. x. 08.

*Note.*—This is the only ♂ of this species I have seen; so I have redescribed it. The specimen is in the Indian Museum, Calcutta.

#### CULEX PROCAX. Skuse (1889).

Proc. Linn. Soc. N. S. Wales, 1742 (1889), Skuse; Mono. Culicid. I., 415 (1901).

N. S. Wales; Queensland.

Type in the Museum at Sydney, N. S. Wales.

#### CULEX QUASIRUBITHORAX. nov. sp.

Very similar to *C. rubithorax*, but no flat median scales on the head, the last hind tarsal dull white, and the fork-cells different.

♀. Head deep brown, clothed with small narrow-curved, pale golden scales, which are denser and brighter, forming a border around the eyes, with numerous long black upright forked scales and some small, flat, pale dull lateral scales; palpi and proboscis black; antennae black, the basal segment bright ochreous with some small curved black hairs.

Thorax rich chestnut-brown, with scattered narrow-curved golden scales and some dark ones (rubbed); chaetae black; scutellum brown, with pale golden narrow-curved scales; border-bristles dark brown; metanotum chestnut-brown; pleurae brown, with patches of white scales and some black chaetae.

Abdomen black, the segments with dull yellow median basal spots and white basal lateral ones; basal segment all black scaled, with brown hairs with pale golden reflections; posterior border-bristles brown, with golden reflections; venter with many pale scales, apex testaceous; hairs golden.

Legs black, under side of femora pale, especially on the hind legs, knee spot white ; fore legs with a narrow basal pale band on the metatarsi and first tarsals ; in the mid rather wider and on the second tarsal also, in the hind wider still, and on the first, second and third segment, and the last all pale ; fore and mid unguis equal and uniserrate, hind equal and simple.

Wings with the first fork-cell longer and narrower than the second, its stem very nearly as long as the cell, its base nearly



Fig. 157.  
Wing of *Culex quasirubithorax*. ♀. n. sp.

level with that of the second fork-cell, stem of the latter about as long as the cell ; posterior cross-vein nearly twice its own length distant from the mid.

*Length.*—4·5 mm.

*Habitat.*—Kuranda, Queensland (Dr. Bancroft).

*Observations.*—Described from 1 ♀, the thorax slightly rubbed. It much resembles *Culex rubithorax*, Macq., but can at once be told by the last hind tarsal being pale, by the different squamose character of the head, the entirely black proboscis, and by the longer stem of the first fork-cell.

*Type* in the British Museum.

#### CULEX RUBITHORAX. Macquart (1850).

Dipt. Exot. Suppl. IV., 9 (1850), Macquart; Mono. Culicid. I., 416 (1901) Theobald; Handbk. of Gnats, 412 (1902), Giles; Mono. Culicid. III., 227 (1903), Theobald; Journ. Trop. Med. VII., 368 (1904), Giles; Gen. Ins. Culicid. 26 (1905), Theobald; Phil. Journ. Sci. I., 9, 988 (1906), Banks.

Tasmania ; S. Queensland.

*Additional locality.*—Pampanga, Camp Stotsenberg, Angeles P. I. (E. R. Whitmore).

*Note*.—Banks says in recording this for the Philippines, “Theobald says ‘this is probably only a spotted variety of *C. concolor* Rob.-Desv.’” This evidently is quoted in error, as I never made any such statement, the two species being very different. It was probably meant to apply to *Culex tigripes*, Grandpre.

**CULEX OCCIDENTALIS.** Skuse (1889).

Proc. Linn. Soc. N. S. Wales, 1729 (1885), Skuse; Mono. Culicid. I., 415 (1901); III., 179 (1903), Theobald.

Somerville, Victoria; King George’s Sound, Western Australia; S. Queensland.

*Type* in the Museum, Sydney, N. S. Wales.

**CULEX MACULIVENTRIS.** Macquart (1846).

Dipt. Exotic Supp. I., 7 (1846), Macquart; Mono. Culicid. I., 421 (1901), Theobald.

Algeria.

*Type* in the Museum Jardin des Plantes, Paris.

**CULEX IMPRIMENS.** Walker (1861).

Proc. Linn. Soc. V., 144, 2 (1861), Walker; Mono. Culicid. I., 422 (1901), Theobald.

Amboina.

*Type* (remnant) in the British Museum.

**CULEX TIBIALIS.** R. Desvoidy (1827).

Mém. de la Soc. Hist. Nat. de Paris, III., 404 (1827), R. Desvoidy; Mono. Culicid. I., 423 (1901), Theobald.

Brazil.

*Note*.—*C. cingulatus*, Fabricius, is probably the same.

LEGS BASALLY PALE BANDED.

**CULEX EXCRUCIANS.** Walker (1856).

Ins. Saund. 429 (1856), Walker.

♀. Tawny, proboscis testaceous, long, straight, slender, brown at the tip. Antennæ brown, testaceous towards the base, a little shorter than the proboscis; pectus paler than the

thorax. Abdomen brownish, with a testaceous band on the hinder border of each segment. Legs testaceous, long, slender; tibiae darker than the femora; tarsi very pale brown, with a testaceous band at the base of each joint. Wings very slightly greyish; veins testaceous, slightly ciliated. Halteres testaceous, with brown knobs.

*Length.*—Body 4 lines; of wing 7 lines.

Nova Scotia and New York.

*Type* in the British Museum.

LEGS WITH TARSI APICALLY BANDED.

**CULEX CAMPTORHYNCHUS.** Thomson (1868).

Eugen. Resa. Dipt. 443 (1868), Thomson; Mono. Culicid. II., 1 (1901),  
Theobald.

Sydney, Australia.

LEGS BASALLY AND APICALLY BANDED.

**CULEX CANADENSIS.** Theobald (1901).

Mono. Culicid. II., 3 (1901).

De Grassi Point, Lake Simcoe, Ontario, Canada and United States.

*Type* in the British Museum.

**CULEX CINGULATUS.** Fabricius.

Mono. Culicid. II., 5 (1901); III., 185 (1903).

Para, Brazil (*vide C. tibialis*).

**CULEX PETTIGREWII.** Theobald (1910).

Rec. Ind. Mus. Calcutta, 15 IV. (1910).

Head brown with pale scales; palpi brown, paled scaled apices; proboscis pale, except for a small dark band at the apex and base. Thorax rich brown, ornamented with a paler curved line on each side, another short one over the roots of the wings, and two indistinct median pale lines in front, each with a central dark line. Abdomen deep brown, with basal grey bands, two grey median spots to the segments, almost joining on to the bands, sixth to eighth segments with many scattered ochreous scales; venter bright ochreous with scattered pale scales. Legs

dark, minutely banded, apically and basally on the tarsi, the femora and tibiae with a pale creamy ventral line. Wings with the sub-costal pale scaled.

♀. Head dark, clothed with rather large narrow-curved creamy scales and flat creamy lateral scales and dark chaetae in front; upright forked scales dark, a few pale ones in front; clypeus brown with grey sheen; palpi brown with creamy scales at the apex and some nearer the base; proboscis dark at base and apex, the median creamy area with some scattered dark scales; antennae dark brown, base of the second segment bright, testaceous.

Thorax dark brown, clothed with rich brown narrow-curved scales; a pale scaled twice-curved line on each side, and a pale scaled short line on each side in front and over the roots of the wings; in the middle in front are traces of two parallel narrow dark lines with somewhat paler scales on each side; supra and pre-alar chaetae brown with pale apices; the supra-alar long and darker than the others; scutellum pale brown with narrow-curved pale scales and long brown posterior border-bristles; the scales at the back of the mesonotum are similar in colour to those of the scutellum; metanotum bright brown; pleurae brown with patches of pale scales.

Abdomen with the basal segment ochraceous with pale scales, the second to fifth segments dark, with grey basal bands, which spread out in the middle, and with two ochreous spots nearly touching them, most pronounced on the fourth and fifth segments, the sixth with many ochreous scales dotted over the dark area, the seventh and eighth almost entirely ochreous; posterior border-bristles thin and pale golden; venter bright ochreous yellow with pale scales, a few dusky ones in the mid region.

Legs rather long, dark, femora and tibiae pale below, those of the fore and mid legs with a pale scaled line in addition; faint traces of very narrow apical and basal pale banding to the hind tibiae, metatarsi and tarsi scarcely perceptible on the fore and mid legs; bases of the legs pallid; femora and tibiae slightly spinose, spines pallid; unguis equal and simple.

Wings with brown scales, a few creamy ones at the base of the costa and *on all the sub-costal*, and a few pale scales on the first long vein; first sub-marginal cell much longer and narrower than the second posterior cell, its base much nearer the base of the wing, its stem about one-third the length of the cell, stem of the second posterior nearly as long as the cell; posterior

cross-vein not quite its own length distant from the mid cross-vein.

Halteres ochreous with some fuscous scales on the knob.

*Length*.—6 mm.

*Habitat*.—Ukhrul, Manipur, 6,400 ft., lat. 25 N., long. 94–95 E. (Rev. W. P. Pettigrew).

*Time of capture*.—viii. 08.

*Observations*.—Described from a perfect ungorged ♀. Three



Fig. 158.  
Wing of *Culex pettigrewii*. ♀. Theobald.

other ♀'s were fully gorged and black. The marked character of this species is the pale scaled sub-costal vein. The pale scales also occur here and there on the upper surface of the first long vein. The abdomen in the type is very marked; but in two of the others, which are somewhat rubbed, the spots on the segments are not so distinguishable.

*Type* in the Indian Museum, Calcutta.

#### CULEX ARABIENSIS. Patton (1905).

Journ. Bombay Nat. Hist. Soc. XVI., 633 (1905).

"Thorax straw coloured with brown curved scales, with a dark line down the centre and two at the sides. Abdomen brown with apical black bands. Tarsi banded at all the joints, *fore unguis unequal and uniserrate*.\*

♀. Head brown, covered with brown upright forked scales,

\* The much-damaged specimen sent me certainly did not show this peculiarity in the ♀. No ♀ mosquito I have yet seen has this character; the unguis are always equal. Probably an error was made, or Patton described an abnormality.—F. V. T.

some darker than others, with many narrow brown curved scales ; along the eyes there are black bristles projecting forward and two marked tufts spreading on the clypeus. Antennae pale in centre and darker at all joints. Palpi dark brown with a small white apical spot, proboscis and clypeus are both dark brown.

Thorax : prothoracic lobes simple with a few dark bristles. Dorsum of thorax is straw-coloured, covered with brown curved scales. There are black bristles at the sides ; scutellum is dark with a few narrow curved scales on each lobe. There are seven to nine bristles on the mid lobe and four on each lateral lobe ; metanotum is brown.

Abdomen : apical black bands consisting of brown broad tile-like scales. Each segment has a large number of brown bristles at the sides and on the dorsum. There are cream-coloured tile-like scales on the central surface.

Legs, coxae brown, femora brown but not densely scaled, pale at the tibio-femoral joint, tibiae brown with well-marked pale band at the tibio-metatarsal joint. Metatarsi densely scaled with a band at both ends. Tarsi are densely scaled with pale bands at all the joints. Fore unguis unequal and uniserrated.

Wing : veins have brown scales. Costal, sub-costal and first longitudinal are darker than the remainder. First sub-marginal cell is nearly twice as long as the second posterior cell.

♂. Head dark brown with many almost black upright forked scales. The upright forked scales cease at the vertex and are replaced by brown curved scales. Antennae dark and light with many dark, long plumes, proboscis is dark brown. Palpi are brown with a pale band about the centre of the second joint ; there is also a pale area at the basal joint. The hair-tufts are brown.

Thorax : scale ornamentation is the same as in the female, scutellum is brown with a variable number of bristles.

Abdomen is banded the same as in the female. Male genitalia, basal lobes narrow, covered with dark hairs, apical segment thin and somewhat club-shaped. The wings are paler than those of the female ; the legs have the same scale ornamentation."

*Habitat.*—This banded Culex was first found in a tank on the plain near Ulub Camp in May, 1904. It was breeding in rain water that had collected in this tank, with *Stegomyia sugens*. This species was also found in the Crater, Aden.

*Larva.*—Head globular, with a few branched hairs on dorsum. The antennae are short with a tuft of hair on the inner side.

The larva is like that of *C. fatigans*, Wiedemann. The syphon tube is somewhat narrow.

The eggs and egg-rafts are the same as of *C. fatigans*.

**CULEX SECUTOR.** Theobald (1901).

Mono. Culicid. II., 321 (1901); IV., 397 (1907).

Jamaica, W.I.

*Type* in the British Museum.

**CULEX QUASISECUTOR.** Theobald (1907).

Mono. Culicid. IV., 398 (1907).

Newcastle, Jamaica, W.I.

*Type* in the British Museum.

**CULEX JANITOR.** Theobald (1903).

Mono. Culicid. III., 183 (1903); IV., 453 (1907).

Jamaica.

*Type* in the British Museum.

**BBBB. LAST HIND TARSI WHITE.**

**CULEX (?) LONGIPALPIS.** Van der Wulp.

Bijd. vagen der Midden Sumatra Exped. IV. 9; Mono. Culicid. II., 28 (1901), Theobald.

Alahn Pandjang and Soeroelangoen, Sumatra.

**CULEX ALBIPES.** Lutz (1904).

Mosq. do Brazil, 6, 41, 72, 76 (1904), Lutz; Mono. Culicid. IV., 406 (1907), Theobald.

Haprica, Bahia State, Brazil.  
*Type* in Dr. Lutz's collection.

**CULEX NIVEITARSIS.** Coquillett (1904).

Proc. Ent. Soc. Wash. VI., 168 (1904), Coquillett; Mono. Culicid. IV., 408 (1907), Theobald.

New Jersey.

**$\beta\beta\beta\beta\beta$ . LEGS WITH FEMORA AND TIBIAE SPOTTED OR LINED.**

**CULEX THEILERI.** Theobald (1903).

Mono. Culicid. III., 187 (1903).

Pretoria ; Madeira.

*Additional locality.*—Stellenbosch, Cape Colony, i. 07 (C. G. H.), per C. Lounsbury.

*Type* in the British Museum..

**CULEX CRETICUS.** Theobald (1903).

Mono. Culicid. III., 189 (1903).

Crete.

*Type* in the British Museum.

 **$\beta\beta\beta\beta\beta$ . LEGS BANDED AT APEX OF TIBIAE ; TARSI UNBANDED.**

**CULEX UNIVITTATUS.** Theobald (1901).

Mono. Culicid. II., 29 (1901).

Durban ; Salisbury, Mashonaland ; Singapore.

*Type* in the British Museum.

**CULEX QUASIUNIVITTATUS.** Theobald (1901).

Mono. Culicid. II., 32 (1901), Theobald ; Handbk. of Gnats, 429 (1902), Giles ; Journ. Trop. Med. VII., 368 (1904), Giles ; Gen. Ins. Culicid. 26 (1905), Theobald ; Journ. Phil. Sci. I., 9, 988 (1906), Banks.

Salisbury, Mashonaland.

*Additional locality.*—Pampagna, Camp Stotsenberg, Angeles, P. I. (E. R. Whitmore).

*Type* in the British Museum.

**CULEX ALBIFASCIATUS.** Macquart (1838).

*Culex vittatus.* Philippi (1865).

*Ochlerotatus albifasciatus.* Macquart ; Arribaljaga (1896).

Dipt. Exot. I., 35, 4 (1838), Macquart ; Mono. Culicid. II., 40 (1901), Theobald.

Argentine ; Brazil ; Chili.

*Type* in the Museum Jardin des Plantes, Paris.

**CULEX FUSCULUS.** Zetterstedt (1850).

Dipt. Scandinaviae, IX., 3459, 7 (1850), Zetterstadt; Mono. Culicid. II., 47 (1901), Theobald.

Scandinavia.

**CULEX IRACUNDUS.** Walker (1848).

Brit. Mus. List, 6 (1848), Walker; Mono. Culicid. II., 47 (1901), Theobald.

New Zealand.

*Type* in the British Museum.

**CULEX PULCRIVENTER.** Giles (1901).

Entomologist, 194, July (1901), Giles; Mono. Culicid. II., 48 (1901), Theobald.

Naini Tal, India.

*Type* in the British Museum.

**CULEX UNCUS.** Theobald (1901).

Mono. Culicid. II. 53 (1901).

Selangor.

*Type* in the British Museum.

**CULEX SUBALBATUS.** Coquillett (1899).

Proc. U.S. Nat. Mus. XXI., 302 (1899), Coquillett; Mono. Culicid. II., 55 (1901), Theobald.

Japan.

*Type* in the United States National Museum, No. 3962.

**CULEX CINEREUS.** Theobald (1901).

Mono. Culicid. II., 58 (1901).

Freetown, Sierra Leone.

*Type* in the British Museum.

**CULEX FRENCHII.** Theobald (1901).

Mono. Culicid. II., 66 (1901).

Victoria.

*Type* in the British Museum.

**CULEX MACROPUS.** Blanchard (1905). nov. nom.

*Culex longipes.* Theobald (1901); non Fabricius (1805).

Mono. Culicid. II., 68 (1901), Theobald; Les Moustiques, 327 (1905),  
Blanchard.

Singapore.

*Type* in the British Museum.

**CULEX CONSOBRINUS.** Robineau-Desvoidy (1827).

*Culex impatiens.* Walker (1848).

*Culex pinguis.* Walker (1867).

Mem. d. l. Soc. d'hist. Nat. d. Paris III., 408 (1827), R. Desvoidy;  
Mono. Culicid. II., 78 (1901), Theobald.

St. Martin's Falls, Albany River, Hudson Bay; Colorado;  
Argus Mountains; Pecos, New Mexico.

**CULEX SAGAX.** Skuse (1896).

Proc. Linn. Soc. N.S. Wales, 1744 (1896), Skuse; Mono. Culicid.  
II., 87 (1901); III., 205 (1903).

Murrumbidgee, N. S. Wales; Bupengary, S. Queensland.  
*Type* in the Museum, Sydney, N. S. W.

**CULEX PERVIGILANS.** Bergroth (1889).

Weiner Entomo. Zeitsch, 295, VIII. (1889), Bergroth; Mono. Culicid.  
II., 88 (1901); III., 206 (Theobald).

Greymouth, New Zealand; N. S. Wales.

**CULEX AUSTRALIS.** Erichson (1842).

*Culex crucians.* Walker (1856).

Archiv. fur Naturs. VIII., 470 (1842), Erichson; Mono. Culicid.  
II., 91 (1901), Theobald.

Tasmania; Marysville, Victoria.

*Type crucians* in the British Museum.

**CULEX HIRSUTERON.** Theobald (1901).

Mono. Culicid. II., 98 (1901), Theobald.

Woodstock, Virginia, U.S.A.

*Type* in the British Museum.

**CULEX IMPUDICUS.** Ficalbi (1890).

Bull. Soc. Ent. Ital. 209 (1896), Ficalbi; Mono. Culicid. II., 101 (1901),  
Theobald.

Sardinia and Sicily.

**CULEX OCHRACEOUS.** Theobald (1901).

Mono. Culicid. II., 103 (1901).

Salisbury, Mashonaland.

*Type* in the British Museum.

**CULEX TRILINEATUS.** Theobald (1901).

Mono. Culicid. II., 105 (1901).

Thayetmyo, Upper Burma.

*Type* in the British Museum.

**CULEX TERRITANS.** Walker (1856).

Ins. Saund. 428 (1856), Walker; Mono. Culicid. II., 111 (1901);  
IV., 448 (1907), Theobald.

United States.

*Additional localities.*—British Columbia and New Hampshire (Dyar); Boston Harbour, Mass.; Fort Du Pont, Del.; Huntingdon, Del.; Fort Logan (H. Roots) Ark.; Fort Williams, Me.; Washington Barracks, D. C.; New York; New Jersey; Fort Brady, Mich.; Fort Etham Allen, Ver.; Key West Barracks, Fla.; Rock Islands Arsenal, Ill.; Ohio; Fort Washington, Ind. (Ludlow).

*Type* in the British Museum.

**CULEX SALISBURIENSIS.** Theobald (1901).

Mono. Culicid. II., 113 (1901); III., 221, ♂ (1903); IV., 452, ♂ (1907).

Sierra Leone; Pretoria.

*Type* in the British Museum.

**CULEX RUSTICUS.** Rossi (1790).

*C. punctatus.* Meigen (1804).

*C. quadrimaculatus.* Macquart (1834).

Fn. Etrusca. t. sec. 333, 1581 (1790), Rossi; Klass. u. Besch. d. Europ. Zweiflug. Ins. I., 6, 10 (1804), Meigen; Hist. Nat. Ins. Dipt. I. (1834), Macquart.

Italy, France and S. Europe.

**CULEX MEDIOLINEATUS.** Theobald (1901).

Mono. Culicid. II., 113 (1901).

Thayetmyo, Upper Burma.

*Type* in the British Museum.

**CULEX INFLECTUS.** Theobald (1901).

Mono. Culicid. II., 115 (1901).

Grenada.

*Type* in the British Museum.

**CULEX ALBOLINEATUS.** Giles (1902).

Handbk. Gnats, 2nd edit., 430 (1902), Giles; Mono. Culicid. III., 192 (1903), Theobald.

Shahjahanpur, N.W. Provinces, India.

*Type* in the British Museum.

**CULEX PALUS.** Theobald (1903).

Mono. Culicid. III., 456 (1903); IV., 456 (1907).

St. Vincent; Barbados; New Amsterdam, British Guiana.

*Type* in the British Museum.

**CULEX BILINEATUS.** Theobald (1903).

Mono. Culicid. III., 196 (1903).

Brazil.

*Type* in the British Museum.

**CULEX VARIOANNULATUS.** Theobald (1903).

Mono. Culicid. III., 198 (1903).

St. Michael's, Azores.

*Additional locality.*—Rosebank, Cape Colony, ix. 05 (C. Lounsbury).

*Type* in the British Museum.

**CULEX PEREXIGUUS.** Theobald (1903).

Mono. Culicid. III., 199 (1903).

Sidon, Palestine.

*Type* in the British Museum.

**CULEX CYLINDRICUS.** Theobald (1903).

Mono. Culicid. III. (1903).

South Queensland.

*Type* in the British Museum.**CULEX SIMILIS.** Theobald (1903).Mono. Culicid. III., 207 (1903), ♀; Journ. Eco. Biol. I., 33 (1905), ♂;  
Mono. Culicid. IV., 448 (1907).

Jamaica; Stanley Town, New Amsterdam, British Guiana.

*Type* in the British Museum.**CULEX NUBILUS.** Theobald (1903).

Mono. Culicid. III., 208 (1903).

British Guiana.

*Type* in the British Museum.**CULEX CRINIFER.** Theobald (1903).

Mono. Culicid. III., 209 (1903).

São Paulo, Brazil.

*Type* in the British Museum.**CULEX AZORIENSIS.** Theobald (1903).

Mono. Culicid. III., 210 (1903).

St. Michael's, Azores.

*Type* in the British Museum.**CULEX GUIARTI.** Blanchard (1905).*Culex viridis.* Theobald (1903) non Robineau-Desvoidy (1827).

Mono. Culicid. III., 212 (1903); IV., 433 (1907).

Gambia; Sierra Leone; Uganda; Sudan.

*Type* in the British Museum.

**CULEX GENICULATUS.** Olivier (1791).

*Culex hortensis.* Ficalbi (1889).

*Culex apicalis.* Adams (?) (1903).

Encyclo. Methodique, Hist. Nat. Insectes, T. 16, Olivier (1791);  
Mono. Culicid. III., 216 (1903), Theobald.

Italy; Paris; Safed, Palestine.

**CULEX APICALIS.** Adams (1903).

Kansas Uni. Sci. Bull. II., 2, p. 26 (1903); Mono. Culicid. IV., 452 (1907),  
Theobald.

Arizona, U.S.A.

Possibly only *C. geniculatus.* Olivier (1791).

**CULEX SERGENTII.** Theobald (1903).

Mono. Culicid. III., 218 (1903).

Algeria.

Type in the British Museum.

**CULEX MATHISI.** Neveu-Lemaire (1902).

Archives de Parasitologie, VI., 13 (1902), Neveu-Lemaire; Mono. Culicid.  
III., 220 (1903), Theobald.

Conani, Guiana.

**CULEX OCELLATUS.** Theobald (1903).

Mono. Culicid. III., 222 (1903).

São Paulo, Brazil.

Type in the British Museum.

**CULEX PALLIDOSTRIATUS.** Theobald (1907).

Mono. Culicid. IV., 410 (1907).

Peradeniya, Ceylon; India.

Type in the British Museum.

**CULEX DYARI.** Coquillett (1902).

*Culicella dyari.* Coquillett (1902).

Journ. N. York Ent. Soc. X., 192 (1902), Coquillett; Mono. Culicid.  
IV., 412 (1907), Theobald.

New York; British Columbia.

CULEX QUASILINEALIS. Theobald (1907).

Mono. Culicid. IV., 415 (1907).

Adelaide.

*Type* in the British Museum.

CULEX PSEUDOMELANOCONIA. Theobald (1907).

Mono. Culicid. IV., 416 (1907).

S. Queensland.

*Type* in the British Museum.

CULEX STOEHRI. Theobald (1907).

Mono. Culicid. IV., 419 (1907).

British Central Africa.

*Type* in the British Museum.

CULEX FUSCOCEPHALA. Theobald (1907).

Mono. Culicid. IV., 420 (1907).

Peradeniya, Ceylon.

*Additional localities.*—Pallode, 20 miles N.E. of Tribandrum, Travancore (15. xi. 08 : one ♀) (Annandale) (in Indian Museum, Calcutta); Hakgala, Ceylon, two ♀'s (E. Green), v. and xi. 07.

*Type* in the British Museum.

CULEX MINOR. Theobald (1908).

Rec. Ind. Mus. II., pt. iii., No. 30, 298 (1908), Theobald.

Head brown, slightly darker at the sides and paler around the eyes; proboscis and palpi brown. Thorax bright brown; pleurae ochreous with two brown patches. Legs deep brown, unbanded, bases pallid. Abdomen deep brown with pale lateral basal spots and pale venter.

♀. Head deep brown with pale narrow-curved scales, pale lateral flat scales and blackish upright forked scales except in front between the eyes where they are golden-brown, chaetae black, except between the eyes where they are golden; proboscis, palpi, antennae and clypeus brown.<sup>2</sup>

Thorax dark brown, clothed with very slender narrow-curved

bright brown scales, paler just in front of the head and at the sides, larger chaetae deep brown, but the smaller ones in front of the roots of the wings and some over the head pale golden; scutellum pale brown with small narrow-curved pale golden scales similar in colour to those at the mesonotum near it; pleurae pale ochreous with some pale flat scales and two dark patches, metanotum bright chestnut-brown.

Abdomen deep brown, clothed with deep brown scales and with dull white lateral basal patches, but extending partly along the whole length of the segments; border-bristles pale; venter mostly grey scaled.

Legs brown, unbanded, coxae pallid, base and under side of femora pale, unguis small, equal and simple.

Wings with rather long fork-cells; the first sub-marginal much longer and a little narrower than the second posterior-cell,

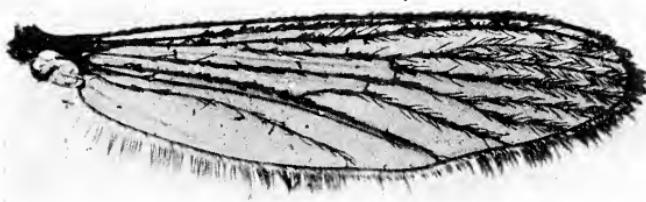


Fig. 159.  
Wing of *Culex minor*. ♀. Theobald.

its base nearer the base of the wing, its stem less than one-third the length of the cell; stem of the second posterior about two-thirds the length of the cell; mid cross vein nearer the apex of the wing than the supernumerary, the posterior cross-vein nearly twice its own length distant from the mid.

*Length.*—3 to 3·5 mm.

♂. Palpi thin, brown, the last two segments about equal, with short black bristles, scarcely to be called a hair-tuft. Fore unguis unequal, uniserrate; mid nearly equal, uniserrate, hind small, equal and simple.

Wings with the first sub-marginal cell a little longer and narrower than the second posterior-cell, its base a little nearer the base of the wing. Clasper of male genitalia rather broad, lateral process of basal lobe with three large broad spines and three smaller ones.

*Length.*—3 to 3·5 mm.

*Habitat*.—Sylhet, Assam (Major Hall); Lushai Hills, Assam (E. C. Macleod); Calcutta; Lungleb.

*Time of capture*.—Calcutta in December; Lushai Hills, June; Lungleb, July.

*Observations*.—Described from two ♀'s and three ♂'s. A small obscure species easily told by its unbanded abdomen and only to be confused with *Culex fuscocephala*, Theob., described from Ceylon, but the latter has a dark fuscous head and there are no basal lateral pale spots.

*Types* in the Indian Museum, Calcutta.

#### CULEX FRAGILIS. Ludlow (1903).

Journ. N. York Ent. Soc. XI., 142 (1903); Mono. Culicid. IV., 424 (1907); Mosq. Philip. Isls. 10 (1908), Ludlow.

Oras, Samar, Philippine Islands.

*Type* in Army Medical Museum, Washington, D.C.

#### CULEX VARIPALPUS. Coquillett (1902).

*Culex varipalpis*. Blanchard (1905).

Canad. Entomo. XXXIV., 292 (1902).

Arizona.

*Type* in the National Museum, Washington.

#### CULEX SUBFUSCUS. Theobald (1907).

Mono. Culicid. IV., 403 (1907).

Moncague, Jamaica, W.I.

*Type* in the British Museum.

#### CULEX NIGRITHORAX. Macquart (1847).

Dipt. Exot., 2nd supp., 9 (1847), ♂, Macquart; Proc. Linn. Soc. N. S. Wales (2), III., 1744 (1899), Skuse; Handbk. Gnats, 328 (1900), Giles.

Thorax black; abdomen fuscous, with whitish incisuræ; legs rufescent; proboscis black; palpi and antennæ brownish; thorax and pleurae rather dull black; abdomen with the anterior border of the segments yellowish-white; last segment and copulatory armature black; venter with whitish hairs; legs rather bright tawny; extremity of femora brownish; posterior

tarsi brownish. Wings a little yellowish, with reddish vein-cells normal.

*Length.*— $3\frac{1}{2}$  lines.

Tasmania.

*Type* in Bigot's Collection.

**CULEX HORTENSIS.** Ficalbi (1899).

Bull. Soc. Ent. Ital. 292 (1899), Ficalbi; Mono. Culicid. II., 117 (1901), Theobald.

Italy.

**CULEX PSEUDOLONGIFURCATUS.** Theobald. nov. nom.

*Culex longifurcatus.* Theobald (non Becker 1903) (1910).

Rec. Ind. Mus. IV., 19 (1910).

Thorax uniformly fuscous and smoky; head much the same colour, but with some paler scales; palpi, proboscis and antennae smoky-brown; abdomen deep brown, with basal pale bands spreading out in the middle to form median patches; legs uniformly smoky-brown; wing rather long and narrow, fork-cells long, the veins and scales very thin. Male palpi thin, no hair tufts.

♀. Head dark, clothed with dull creamy narrow-curved scales, small, flat, creamy, lateral ones, numerous dark upright forked scales, some paler ones in front; palpi, clypeus, proboscis and antennae brown.

Thorax dark brown with fuscous brown, scanty, narrow-curved scales and brown chaetae; scutellum brown with similar narrow-curved scales; metanotum brown and testaceous; pleurae dark brown and grey.

Abdomen deep brown, with basal, almost white bands which are enlarged in the middle, forming more or less pronounced spots; border-bristles pallid; venter all grey scaled.

Legs long and thin, uniformly brown, except the under side of the femora which is completely creamy-white; unguis equal and simple.

Wings large and long; fork-cells long; first sub-marginal longer and narrower than the second posterior, their bases nearly level, its stem about one-third the length of the cell; stem of the second posterior less than one-third the length of the cell; posterior cross-vein longer than the mid, about one and a half times its own length distant from it; lateral vein-scales on the apical areas of the veins long and thin.

narrower than the second posterior, its base nearer the base of the wing, its stem less than one-third the length of the cell;

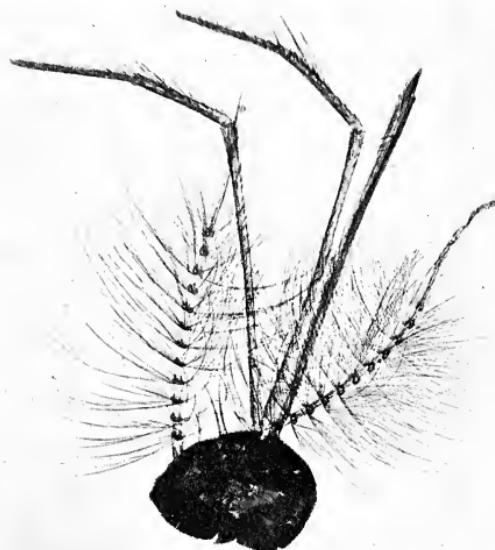


Fig. 160.  
*Culex nigrocostalis.* ♂. n. sp. Head.

stem of the second fork-cell about two-thirds the length of the cell; posterior cross-vein longer than the mid, sloping backwards, and about two and a half times its own length distant from it.



Fig. 161.  
Wing of *Culex nigrocostalis.* ♀. n. sp.

*Length.*--3 mm.

♂. Like the ♀, but the abdomen more prominently banded. Palpi and proboscis deep brown, the former acuminate and

*Length.*—5 mm.

♂. Palpi long and thin, dark brown, acuminate, no hair tuft, a few dark hairs and chaetae; apex of proboscis swollen.

Wings with relatively long fork-cells; first sub-marginal narrower and longer than the second posterior, its stem less than one-third the length of the cell; stem of the second posterior rather more than half the length of the cell; posterior cross-vein nearly twice its own length distant from the mid. Fore and mid unges unequal, both uniserrate, the larger with a large tooth, hind equal and simple.

*Length.*—4 to 5 mm.

*Habitat.*—Dahawangahary Hill, Nepal.

*Time of capture.*—16. xi. 08.

*Observations.*—Described from two ♀'s and one ♂. A very marked *Culex* with obscure ornamentation, easily told by the long fork-cells, very thin veins and large wings and long legs. The male genitalia seem very marked, but there is not enough material to dissect them.

*Type* in the Indian Museum, Calcutta.

#### CULEX NIGROCOSTALIS. nov. sp.

Very like a small *C. fatigans* or *C. pallidocephala*, but the thorax uniformly clothed with dull golden-brown scales, and the outer costal border of the wings very dark.

♀. Head black, clothed with dull grey ragged narrow-curved scales, small dull grey flat lateral scales and black upright forked scales; clypeus deep brown, palpi and proboscis deep black; antennae deep brown with narrow pale bands.

Thorax deep brown, clothed uniformly with small, hair-like, curved, dull golden-brown scales and deep brown chaetae, dull golden at their base; scutellum paler brown, with scanty dusky hair-like curved scales, dull golden in some lights, and six deep brown border-bristles to the mid lobe.

Abdomen blackish-brown, with narrow basal white bands and golden-brown to golden border-bristles.

Legs deep blackish-brown, unbanded, femora pale below, a few pale scales at the apices of the femora and tibiae; unges small, equal, and simple.

Wings with dark brown scales, the outer costal border and the first long vein and sub-costal black; first fork-cell longer and

*CULEX PALLIDOTHORACIS.* nov. sp.

Thorax uniformly clothed with pale ochreous scales. Abdomen dark brown in the female with traces of pale basal banding, prominent in the male. Palpi, proboscis, and legs uniformly dark brown.

♀. Head black, densely clothed with narrow-curved, pale ochreous, almost creamy scales, flat similar coloured lateral

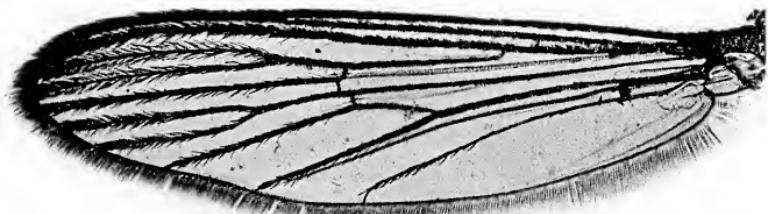


Fig. 164.

Wing of *Culex pallidothoracis*. ♀. n. sp.

scales, rich golden-brown central upright forked scales and black upright ones at the sides; golden chaetae between the eyes, dark ones at the sides; clypeus brown; palpi and proboscis almost black; antennae brown.

Thorax black, densely and uniformly clothed with narrow-

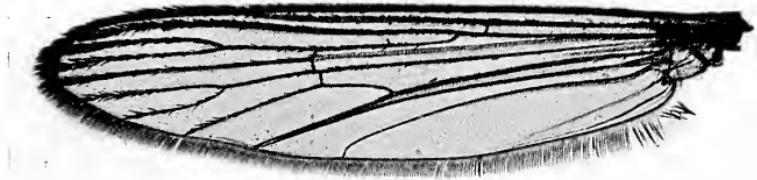


Fig. 165.

Wing of *Culex pallidothoracis*. ♂. n. sp.

curved, pale ochreous, almost creamy scales, with golden and brown chaetae; scutellum very pale with similar scales and brown border-bristles; metanotum brown; pleurae very pale.

Abdomen dark brown, some of the apical segments with basal creamy bands; border-bristles brown, golden at their apices; venter with many pale scattered scales; traces of basal lateral pale spots.

longer than the proboscis by the last and apical portion of the penultimate segment, the last two segments with scanty, long,

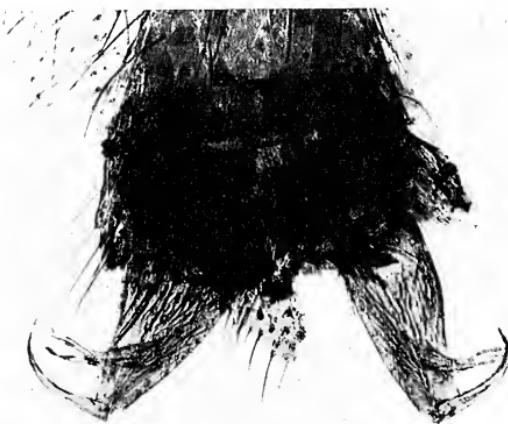


Fig. 162.  
Male genitalia of *Culex nigrocostalis*. n. sp.

dark hairs. Ungues of fore and mid legs unequal, uniserrate, hind equal and simple. Wings with short fork-cells, the first slightly narrower and much longer than the second fork-cell, stem of the first about three-fourths the length of the cell, stem of the latter nearly as long as the cell; posterior cross-vein longer than the mid, nearly three times its own length distant from it.

*Length*.—4 mm.

*Habitat*.—Accra (Dr. Graham).

*Hatched out*.—7 and 18. vi. 08 ( $\delta$ ), 7. vii. 08 ( $\varphi$ ).

*Observations*.—Described from a single perfect  $\varphi$ , hatched from a long siphoned larva, and three  $\delta$ 's. This is a small, rather obscure *Culex*, near *C. fatigans*, Wied., and *C. pallidocephala*, Theob., but can be told from both by the very dark outer costal border and veins near it. A small fragile species.

*Type* in the British Museum.

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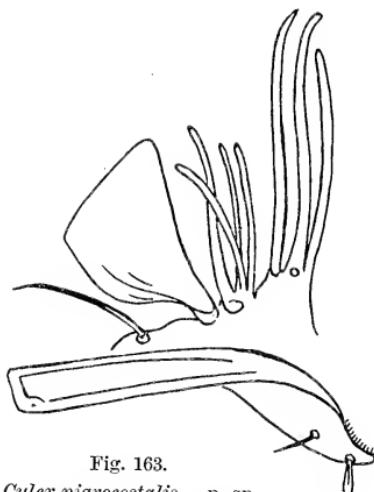


Fig. 163.  
*Culex nigrocostalis*. n. sp.  
 $\delta$  genitalia; the clasper shortened, but showing natural position of sub-apical spine and bristle.

Legs uniformly brown, with dull ochreous reflections, paler beneath; unguis equal and simple.

Wings with the fork-cells long; the first longer and narrower than the second posterior, its base nearer the base of the wing, its stem about one-third the length of the cell; stem of the second about half the length of the cell; posterior cross-vein nearly its own length distant from the mid; scales of typical *Culex* form.

*Length*.—5 to 5·5 mm.

♂. Similar to ♀, but the abdominal banding very pronounced. Palpi acuminate, black at the apices, paler basally, hairs dark; antennae with flaxen brown plume-hairs, paler at their apices. Fork-scales dense, dark behind as well as at the sides. Fore and mid unguis unequal, the larger with a large tooth, the smaller with a small one, hind equal and simple. Genitalia with a large broad foliate plate.

*Length*.—5 to 6 mm.

*Habitat*.—Obuasi, Ashanti (Dr. Graham).

*Time of capture*.—8. i. 08; 10. xii. 07; 20. vi. 07; 17. vii. 07; 7. viii. 07; 20. ix. 07; 18. 19. x. 07; 13. xi. 07.

*Observations*.—Caught on bush paths. Described from a series of several males and females. It is very marked on account of the pronounced pale scaled thorax. The ♀'s show some variation in regards to abdominal banding, some showing it much more prominently than others.

*Type* in the British Museum.

#### CULEX FRICKII. Ludlow (1906).

Canad. Entomo. XXXVIII., 132 (1906).

“♀. Head covered with pale ochraceous, almost white scales, long curved ones, heavily intermingled with dark brown forked scales on the occiput and vertex, flat lateral scales, light around the eyes, with a few dark bristles projecting forward; antennae brown, verticels and pubescence brown, first joint with a few light scales, basal joint covered with ‘frost’ and a few white scales; palpi dark brown, distal joint small; proboscis brown; clypeus brown, with ‘frost’; eyes dark brown.

Thorax brown; prothoracic lobes covered with pale ochraceous scales and dark brown bristles; mesonotum with narrow-curved dark brown scales, a golden-brown in some lights, a few pale ochraceous ones hardly forming a line on the lateral margins and

an arch of them surrounding the 'bare space,' two sub-median bare lines from cephalic end nearly to 'bare space' covered with 'frost,' so that they seem like two very fine but distinct white lines; scutellum brown, with pale ochraceous curved scales and large brown bristles; the pleura covered with white 'frost,' and having a couple of large bunches of white flat spatulate scales; metanotum brown.

Abdomen brown, covered with rather broad flat scales, tending to iridescence, narrow white apical bands, and white apical lateral spots continuous with the scaling of the venter, which is white; white apical hairs. On the last segment the apical band becomes much diminished on the median line, possible sometimes broken so as to form two spots.

Legs as a whole brown; coxae and trochanters light and nearly naked, but showing the white 'frost,' femora light at base and on ventral aspect, a small light knee-spot minutely involving both sides of the joint; tibiae brown, a minute apical light spot involving both sides of the joint, remainder of tarsi all brown; all unguis small, equal and simple.

The colouring as a whole is dark, but the scales are very sensitive to the position of the light, and on the legs it is almost impossible to determine if there be a very narrow light line on the ventral aspect of the tibia or not, for in some lights it is not apparent, and in others it appears present. The mesothorax shows the same trait, in that the tips of the scales become golden-brown, and are thus very misleading.

Wings clear; scales brown, slender, covering the distal half of the wing rather heavily; cells vary somewhat in the two wings, first sub-marginal about a third longer and nearly the same width as second posterior, the stem of the former about a fourth the length of its cell, of the latter a little more than half the cell's length; supernumerary and mid about the same length and meet, posterior cross-vein slightly shorter and three times its length distant. Halteres light, a few brown scales on the distal parts of stem.

*Length.*—4 mm.

*Habitat.*—Fort Snelling, Minn. Taken Oct. 1.

Collected and sent by Major E. B. Frick, Surg. U.S. Army, after whom it is named.

It lies very near *territans*, but differs in general colouring, in the 'frosty' sub-median lines on the mesonotum, the light scales around the 'bare space,' light scales on the scutellum, the much

better developed apical abdominal bands, white bases and venter of femora, and the minute spot at apex of tibia."

The above is Miss Ludlow's description.

*Type* in the Army Medical Museum, Washington.

CULEX CHLOROVENTER. nov. sp.

Thorax brown, ornamented with pale ochreous brown, the latter forming a curved band on each side, to some extent passing back to the scutellum. Abdomen unbanded, with basal white lateral spots; venter green in life. Male clasper nearly straight.

♀. Head brown with narrow-curved, dull golden scales over



Fig. 166.

Wing of *Culex chloroventer*. ♀. n. sp.

most of its surface, black, upright forked scales and dull, flat, creamy lateral ones; palpi, proboscis, and antennae deep brown.

Abdomen deep brown, unbanded, with basal white lateral spots, border-bristles dusky at base, pale at apex; venter sea-



Fig. 167.

Wing of *Culex chloroventer*. ♂. n. sp.  
A large specimen.

green in life, when dead ochreous with pale basal bands and dusky apical ones.

Legs brown, unbanded; femora pale below at the base; unguis equal and simple.

First sub-marginal cell longer and slightly narrower than the second posterior cell, its base nearer the base of the wing, its stem about one-third the length of the cell; stem of the second posterior about two-thirds the length of the cell; posterior cross-vein about its own length distant from the mid; scales on the apex rather dense, broad short ones on the apex of the first long vein.

*Length*.—3·5 to 4 mm.

♂. Thorax and abdomen as in the ♀. Palpi longer than the proboscis, acuminate, brown; last two segments of nearly equal length, with long blackish hairs.

First sub-marginal cell longer and narrower than the second posterior cell, its base nearer the base of the wing, its stem less

than half the length of the cell; stem of the second posterior nearly as long as the cell; posterior cross-vein about twice its own length distant from the mid. Fore and mid unguis unequal, uniserate, hind equal and simple. Claspers of genitalia thin, nearly straight; foliate plate flat at the apex.

*Length*.—4 mm.

*Habitat*.—Accra and Obuasi, Ashanti (Dr. Graham).

*Time of capture*.—6. 22. vi. 08 and 5. vii. 08.

*Observations*.—Caught in latrines, on wall, common in Accra, and in house at Obuasi.

Very near *Culex viridis*, Theobald\*, but differs in the venation, green venter to abdomen, absence of green pleurae, and in the male genitalia.

*Type* in the British Museum.

#### CULEX QUASIGUARTI. nov. sp.

Head black, a small median paler area in front, eyes silvery; palpi and proboscis black, the former the darker. Thorax rich deep brown with bronzy-brown and dull golden narrow-curved scales; pleurae brown and grey with patches of flat white scales. Abdomen of ♀ black unbanded but with lateral basal white

\* This was renamed by Blanchard *C. guiarti*.

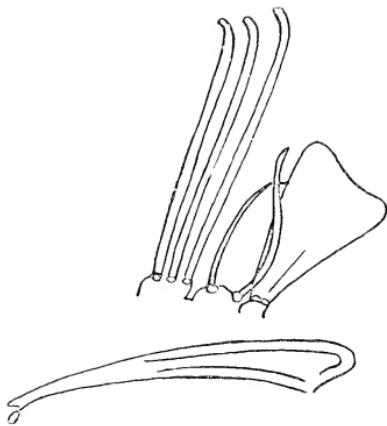


Fig. 168.

*Culex chloroventer*. n. sp.  
Male clasper, etc.

spots and golden border-bristles giving almost a banded appearance ; basal segments of male with traces of dull white bands. Legs unbanded.

♀. Head black with a median V-shaped area of small narrow-curved golden scales, not reaching quite to the nape, dusky at the sides with dense black upright forked scales, which give the head a black appearance, no fork scales on the golden

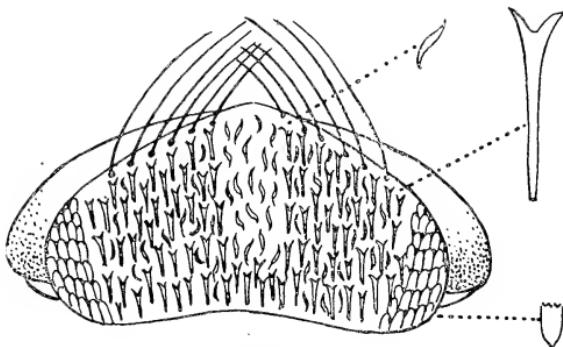


Fig. 169.  
*Culex quasiguaiarti*. ♀. n. sp. Head.

median area ; small flat dull white scales at the sides ; six black incurved long chaetae on each side on the eye borders ; palpi and proboscis jet black ; antennae thick, black. Palpi of three segments, the apical one longer than the other two.

Thorax rich deep brown with bright bronzy narrow-curved scales, some showing dull golden reflections especially over the roots of the wings ; chaetae black ; scutellum pale ochreous with very pale golden scales ; metanotum brown ; pleurae brown and grey with patches of flat white scales.

Abdomen with dull ochreous integument covered with small flat dark scales with dull violet reflections, black in certain lights, unbanded, but the scales are scanty at the bases of the segments, this and the five brown and golden tipped border-bristles give a quasi-banded appearance ; basal segment ochraceous with a squarish median patch of black scales and fine long brown hairs with golden tips ; the chaetae in certain lights pale golden ; laterally are basal white spots ; venter with basal half of segments pale scaled.

Legs uniformly black except base and under side of the femora, a small pale knee spot on each leg ; unguis equal and simple.

Wings with rather long fork-cells, the first sub-marginal cell much longer and narrower than the second posterior, its base nearer the base of the wing, its stem about one-fourth the length

of the cell ; stem of the second fork-cell less than half the length of the cell ; posterior cross-vein a little longer than the mid and a little more than its own length distant from it ; lateral vein scales long and thin.

*Length.*—5 to 5·5 mm.

♂. Like the ♀, but the abdomen has some basal white scales on the second, third and fourth segments and the median dark scaled area on the basal segment is divided into two patches ; hairy, hairs very fine, golden-brown. Fore and mid unguis unequal, uniserrate, hind equal and simple.

Wings with the first fork-cell longer and narrower than the second, its base nearer the base of the wing, its stem a little more than half the length of the cell ; stem of the second about two-thirds the length of the cell ; cross-veins dark, posterior about  $1\frac{1}{2}$  times its own length distant from the mid.

*Length.*—5·5 mm.

*Habitat.*—Mpuma, Uganda (Sir David Bruce).

*Observations.*—Described from three ♀'s and one ♂. It comes near to *Culex guarti*, Blanchard, but can be told by the absence of green pleurae, and near *C. azoriensis*, Theobald, but can be told from that by the peculiar cephalic adornment and the venation and banded abdomen of the male, and from *C. chloro venter* in head adornment.

*Type* in the British Museum.

#### CULEX ORNATOTHORACIS. nov. sp.

Thorax ornamented with brown and pale creamy-golden scales with two dark parallel median lines. Abdomen black, unbanded, with small pale base, lateral spots ; palpi, proboscis, and legs deep brown, femora slightly swollen.

♀. Head brown, with narrow-curved pale scales and flat small pale lateral scales, median upright forked scales ochreous, lateral ones dark ; clypeus, palpi, and proboscis black ; antennae brown.

Thorax black with two median dark lines, clothed with bronzy and dull creamy narrow-curved scales, the former in the middle and behind, and has two more or less pronounced spots before the wings ; pale ones behind the head ; chaetae black ; scutellum black with narrow-curved pale scales and deep brown border-bristles ; metanotum brown ; pleurae black with some patches of pale flat scales.

Abdomen black, unbanded, with pale dull border-bristles and with small pale lateral basal spots.

Legs deep brown, paler beneath the femora, and a pale spot at their apex ; chaetae black ; unguis all equal and simple.

Wings with the first fork-cell longer and narrower than the



Fig. 170.  
Wing of *Culex ornatothoracis*. ♀. n. sp.

second, its base nearer the base of the wing, its stem about one-third the length of the cell ; stem of the second fork-cell about one-half the length of the cell ; posterior cross-vein longer

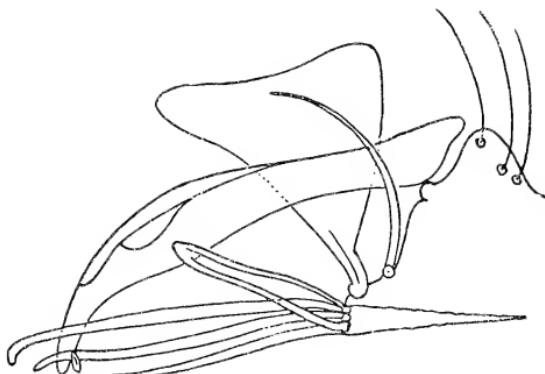


Fig. 171.  
*Culex ornatothoracis*. n. sp.  
Male genitalia.

than the mid, more than its own length distant from it, and sloping towards the base of the wing.

*Length*.—4·5 mm.

♂. Palpi black, longer than the proboscis, the last two segments nearly equal, with long black hairs on each side and a few on the apex of the ante-penultimate. Antennae deep brown with dark plume hairs and pale bands, apical segments densely hairy.

Legs deep brown; fore and mid unguis unequal (apparently uniserrate).

Wings with the vein scales shorter and broader than in the ♀; first fork-cell longer and narrower than the second, its stem about half the length of the cell; stem of the second about two-thirds the length of the cell; posterior cross-vein more than twice its own length distant from the mid, sloping backwards.

Genitalia with a simple clasper, with a distinct flange-like process on one side, foliate plate large and broadly expanded.

*Length.*—4·8 mm.

*Habitat.*—Accra (Dr. Graham).

*Time of capture.*—19. vi. 08.

*Observations.*—Described from a perfect ♀ and ♂ taken in latrines. Quite a distinct *Culex*, which can easily be told by the ornate thorax and marked genitals of the male.

*Type* in the British Museum.

#### CULEX LUTEOLA. nov. sp.

Thorax brown with an ochreous tinge, grey behind. Abdomen brown and ochreous. Legs ochreous. Wings with ochreous veins. Pleurae bright ochraceous, very small.

♀. Head black with ochreous and brown upright forked scales, pale narrow-curved scales and small flat lateral grey

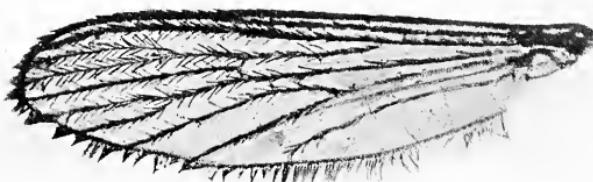


Fig. 172.  
Wing of *Culex luteola*. ♀. n. sp.

scales; chaetae brown; clypeus deep brown; antennae and palpi brown.

Thorax deep brown, clothed with small narrow-curved ochreous scales which at the back of the mesonotum become grey and then pass on to the scutellum; metanotum bright brown; pleurae brown.

Abdomen metallic black, clothed with dull ochreous brown scales and long pale border-bristles.

Legs ochreous brown with dark bristles, simple unguis.

Wings with ochreous veins and scales ; first fork-cell longer and narrower than the second fork-cell, its base a little nearer the base of the wing than that of the latter, its stem a little more than half the length of the cell ; stem of the second posterior about two-thirds the length of the cell ; posterior cross-vein about twice its own length distant from the mid.

*Length*.—2·5 mm.

*Habitat*.—Peradeniya, Ceylon (Green).

*Time of capture*.—x. 1900.

*Observations*.—Described from a single perfect ♀. A very small typical *Culex* showing a general ochreous to dull yellow sheen in certain lights.

I know of nothing like it from Ceylon or elsewhere.

*Type* in the British Museum.

#### CULEX PARASCELOS. Theobald (1910).

Rec. Ind. Mus. 18, IV., 1910.

Thorax golden-brown and brown, with three paler median parallel lines, the areas between them darker than the sides ; head, palpi and proboscis bright ochreous, apex of the latter black. Abdomen entirely clothed with ochreous scales. Legs ochreous brown above, pale ochreous below, with dark and ochreous linear ornamentation. Wings with ochreous and brown scales on the veins near costa ; fork-cells short ; unguis large, all uniserrate.

♀. Head brown with small narrow-curved pale golden scales, ochreous upright forked scales, somewhat darker behind ; ochreous chaetae ; clypeus and palpi bright ochreous, almost golden-yellow, the latter with prominent black chaetae ; proboscis the same colour, dark at the apex, with black chaetae. Antennae brown, ochreous at base.

Thorax deep brown, clothed with scanty small narrow-curved pale golden and rich golden-brown scales, the former making two prominent lateral median lines and an indistinct median one ; chaetae bright golden-brown ; scutellum brown with narrow-curved pale golden scales and golden-brown chaetae ; metanotum brown ; pleurae brown with patches of flat ochraceous scales.

Abdomen dark, densely clothed with bright ochreous yellow scales and pale border-bristles ; venter pale ochreous.

Legs ochreous with dusky scales above ; femora pale below ; a naked yellow and black line showing on the femora and tibiae ; unguis dark, all equal and uniserrate, rather thick.

Wings tinged with yellow, some pale scales on the costa and sub-costal, remainder dark, except for a few creamy ones on the base of the first long vein ; first sub-marginal cell much longer and narrower than the second posterior cell, its base slightly nearer the base of the wing, its stem about two and a half times the length of the cell ; stem of the broad second posterior as long as the cell ; posterior cross-vein about the same length as the mid, not its own length distant from it.

*Length*.—5·5 mm.

*Habitat*.—Madras (Madras Town).

*Time of capture*.—30. x. 08.

*Observations*.—Described from two ♀'s. A very marked species easily told by the thoracic ornamentation, ochreous scaled abdomen and lined legs.

*Type* in the Indian Museum, Calcutta.

**CULEX SCHOLASTICUS.** Theobald (1901).

Mono. Culicid. II., 120 (1901); III., 224 (1903).

Trinidad ; British Guiana ; Calliagua, St. Vincent.

*Type* in the British Museum.

**CULEX MODESTUS.** Ficalbi (1889).

Bull. Soc. Ent. Ital. XXI. (1889), Ficalbi ; Mono. Culicid. II., 122 (1901), Theobald.

Marshes near Ravenna, Italy.

**CULEX VIRGULTUS.** Theobald (1901).

Mono. Culicid. II., 123 (1901).

Rio de Janeiro.

*Type* in the British Museum.

**CULEX MASCULUS.** Theobald (1901).

Mono. Culicid. II., 125 (1901).

Freetown, Sierra Leone.

*Type* in the British Museum.

## CULEX VIRIDIVENTER. Giles (1901).

Journ. Bombay Nat. Hist. Soc. XIII., 609, No. 4 (1901), Giles ;  
Mono. Culicid. II., 128 (1901), Theobald.

Naini Tal, India.

Type in the British Museum.

## CULEX PIPiens. Linn (1758).

*Culex vulgaris*. Linn (1767).

*Culex alpinus*. Linn (1767).

*Culex ciliaris*. Linn (1767).

*Culex communis*. De Geer (1776).

*Culex domesticus*. Germar (1817).

*Culex rufus*. Meigen (1818).

*Culex agilis*. Bigot (1889).

*Culex phytophagus*. Ficalbi (1889).

Syst. Nat. Ed. X., 602, 1 (1758), Linnaeus; Fn. Suecica, 464, 1890 (1761), Linnaeus; Syst. Nat. Ed. XII., 1002, 1 (1767), Linnaeus; Mono. Culicid. II., 132 (1901); III., 224 (1903); Reise der Novara, Diptera (1868), Schiner; Philip. Journ. Sci. I., 9 (1906), Banks.

Europe generally; Malta; Madeira; Teneriffe; Algeria; N. America.

*Additional localities*.—Malaga, Spain (per H. J. Ainsworth); D'thala, Jehab, Hardebar and Nobat (Patton) (?) (F. V. T.); Philippine Islands (Schiner).\*

*Observations*.—Patton says it occurs in all the wells and springs at D'thala and is found at the highest point, 7000 odd feet, breeding in pools of rain water that collected in holes in rocks. It is very unlikely that this is the true *pipiens*, which is purely a domestic gnat.

Mr. F. L. Burton sends the following notes from Shrewsbury :—

- “Jan. 1, 1900-1909. ♀ Hibernating in cellars, outhouses, etc.
- Feb. 1, 1900-1909. ♀ Hibernating in cellars, outhouses, etc.
- March 3, 1907. ♀ Trying to get out of windows.
- April 6, 1909. ♀ Biting by study fire.
- April 19, 1909. ♀ Out in woods.
- April 21, 1909. ♀ In sandstone quarry.
- June 19, 1909. ♂ Swarming on corner of garden wall, 10 feet; sunset.

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\* This is probably only *C. fatigans*, Wied.

July	3, 1909.	♂	Swarming on corner of garden wall, 10 feet ; sunset.
July	8, 1909.	♂	Swarming by river.
July	15, 1909.	♂	Swarming at corner of garden wall.
Aug.	6, 1909.	♂	Swarming at corner of garden wall.
Aug.	22, 1909.	♂	Swarming at corner of garden wall.
Aug.	27, 1909.	♂	Swarming everywhere, thorn bushes, beech-trees, willows, etc.
Sept.	5, 1909.	♂	Swarming everywhere, larches, sycamores, spruce ; sunset.
Sept.	10, 1909.	♂	Swarming everywhere, larches, sycamores, spruce ; sunset.
Sept.	17, 1909.	♂	Swarming everywhere, larches, sycamores, spruce ; sunset.
Sept.	26, 1909.	♂	Swarming everywhere, larches, sycamores, spruce ; sunset.
Oct.	6, 1909.	♂	Swarming everywhere, larches, sycamores, spruce ; sunset.
Oct.	13, 1909.	♂	Swarming everywhere, larches, sycamores, spruce ; sunset.
Oct.	19, 1909.	♂	Swarming, but decreasing ; 5.10 P.M.
Oct.	20, 1909.	♂	Swarming, but decreasing.
Oct.	22, 1909.	♂	On windows.
Oct.	28, 1909.	1 ♂	On study window.

The swarms of ♂ are countless. I have only been bitten by this fly indoors."

**CULEX QUASIPPIENS.** Theobald (1901).

Mono. Culicid. II., 136 (1901).

Sambalpur, Central Provinces, India.

*Type* in the British Museum.

**CULEX FOUCHOWENSIS.** Theobald (1901).

Mono. Culicid. II., 137 (1901).

Fou Chow, China.

*Type* in the British Museum.

**CULEX NIGRITULUS.** Zetterstedt (1850).

Dipt. Scand. IX. 3459, 6 (1850), Zetterstedt; Mono. Culicid. II., 140 (1901); III., 201 (1903), Theobald.

Scandinavia ; England ; Crete.

*Additional localities.*—Lausanne, Switzerland (Valleries) 2 ♀'s.  
Bourgas, Bulgaria, developed from larvae from prison, 23. vi. 06.

**CULEX RESTUANS.** Theobald (1901).

Mono. Culicid. II., 142 (1901); IV., 417 (1907).

Canada and United States.

*Type* in the British Museum.

**CULEX ZOMBAENSIS.** Theobald (1901).

Mono. Culicid. II., 143 (1901).

Zomba, British Central Africa.

*Type* in the British Museum.

**CULEX SERICEUS.** Theobald (1901).

Mono. Culicid. II., 147 (1901).

Hong Kong.

*Type* in the British Museum.

**CULEX REESII.** Theobald (1901).

Mono. Culicid. II., 145 (1901).

Hong Kong.

*Type* in the British Museum.

**CULEX FLAVIPES.** Macquart.

Mono. Culicid. II., 149 (1901); III., 224 (1903).

Trinidad; George Town, British Guiana.

*Additional locality.*—Rio de Janeiro (Fajardo).

**CULEX FATIGANS.** Wiedemann (1828).

*Culex aestuans.* Wiedemann (1828).

*Culex pallipes.* Meigen (1838).

*Culex anxifer.* Coquerel (Bigot), (1859).

*Heteronycha dolosa.* Arribalzaga (1896).

*Culex pungens.* Wiedemann (1828) (?).

Auss. Zweit. Ins. 10 (1828), Wiedemann; Mono. Culicid. II., 151 (1901); III., 225 (1903), Theobald; Ann. Trop. Med. and Par. II., No. 3, 262 (1908), D'Emmerez de Charmoy.

India; Ceylon; Burma; Straits Settlements; China; E. Indies; Japan; West Indies; S. and Central America; S. of N.

America ; Natal, Mombasa, Pemba Island (E. Africa), Zanzibar, Egypt, Sudan, British Central Africa, Senegambia ; Australia ; Mauritius ; Seychelles ; Sarawak ; Fiji.

*Additional localities.*—Phrapatooon, Siam, 10. 14. 18. i ; 19. iii ; 30. xii. 07 ; viii. and xi. 06 (Dr. G. P. Woolley) ; Ferozepore district, Punjab, India, 2 ♂'s and 1 ♀ (Major Adie) ; Cape Town, in house, 7 ♀'s, 3 ♂'s, 19. 26. v. and 1. 4. 12. vi. 08 (C. K. B.) ; Delagoa Bay, E. Africa, 2 ♀'s (José F. Sant' Anna) ; Honolulu, 1 ♀ and 1 ♂ (Terry) ; West Lake, Hanchow, China, 37 ♀'s and 26 ♂'s, 21–28. vi. 07 to 09 (C. E. Cornford) ; Samarang, Java (Jacobson and Dreschner), i. 06 and ix. 05 ; Uilour, Sumatra, 30. vi. 02 (in Amsterdam Museum) ; Pasoeroea, Kobus (in Amsterdam Museum) ; Aden Hinterland (Patton). Base of Dawna Hill, L. Burma, 4. iii. 08 (N. A.) ; Bettiah, Champaran, Bengal, 4. iii. 08 (27) ; 5. iii. 08 (8) ; 7. iii. 08 (8) ; 8. iii. 08 (8) ; Naini Tal, Kumaon, 6–7,000 ft., 1908 (2) (R. E. Lloyd) ; Naini Tal Dist., Dhikala, U.P., 22. iv. 08 (4) (R. H.) ; 26. iv. 08 (5) ; Naini Tal Dist., Chuharwala, U.P., 15. iv. 08, R. H. (3) ; Naini Tal, Patair, 27. iv. 08 (3) ; Lucknow, 21. and 22. i. 08 (2) ; 21. iv. 07 (N. A.) ; 7. viii. 07 (Brunetti) ; 5. ii. 08 (R. H.) ; Calcutta, 1. ii. 07 ; 7. 13. and 22. i. 08 (C. A. P. and N. A.) (2) ; 31. i. 08 (1) ; 17. ii. 08 (C. Paiva) ; 29. iii. 08 ; 13. iii. 07 (3) ; 4. iv. 08 ; 1. v. 08 (6) (E. C. D.) ; 21. vi. 08 (N. A.) ; 21. 27. and 28. vii. 07 (4) ; 3. and 4. viii. 07 ; 5. and 6. viii. 07 ; common in Museum premises, 25. iii. and 22. vii. 08 ; Balyganj, Calcutta, 5. and 6. ii. 08 (J. B. R.) (12) ; Lahore, Punjab, 8. v. 08 (N. A.) (11) ; Rangoon, Burma, 1. i. 05 (3) ; 3. i. 05 ; 23. ii. 05 (8) (Brunetti) ; 24. ii. 08 (3) ; 25. ii. 08 (3), in house (N. A.) ; 15. iii. 08 (3) ; in house (N. A.) ; Mandalay, U. Burma, 6. iii., 11. 12. 13 (4), 17. 21. iii. 08 (N. A.) ; Moulmein, L. Burma, 27. i. 08 (11) ; 7. ii. 08 ; 27. ii. 08 (2) ; 28. ii. 08 ; 6. iii. 08 (4) ; 12. iii. 08 (2) ; Jhamaspur, Nepal, 18–20. ii. 08 (2) ; Dahawangahary Hill, Nepal, 16. ii. 08 ; Dharampur, 5,000 ft., Simla Hills, 14. v. 08 ; 13. v. 08 (2) ; Sukna, Eastern Himalayas, 500 ft. (N. A.) ; 1. vii. 08 ; Kurseong, 5,000 ft., E. Himalayas, 3. vii. 08 (3) ; 4. vii. 08 (2) ; 5. vii. 08 (2) (N. A.) ; Puri, Orissa Coast, 2. iii. 08 (C. Paiva) (2) ; 18–19. i. 08 (7) (N. A.) ; 20–21. i. 08 (1) (N. A.) ; on ship between Calcutta and Rangoon, 22–23. ii. 08 (N. A.) ; on ship in Bay of Bengal, 22–23. ii. 08 (N. A.) ; Rajmahal, Bengal, 31. viii. 07 (3) ; Balighai, nr. Puri, Orissa, 25. x. 08 ; Tenmalai, W. side of W. Ghats, 22. xi. 08 ; Ukhru, Manipur, 6,400 ft., lat. 25 N., long. 94–95 E., viii. 08 (Rev. W.

Pettigrew); Ferozepore, Punjab (173) (Lt.-Col. Aidie); Kalmandu, Nepal (2 ♀'s), Oct. 1906; Rajshai, E. Bengal, 1-6. ii. 07 (N. A.); Agra, 4. iv. 05 (Brunetti); Manilla, 10-16. iii. 06 (Brunetti); Soerabaya, Java, 16-25. vii. 06 (Brunetti).

*Observations.*—D'Emmerey de Charmoy says this is the commonest of all the species in Mauritius. It is very numerous all over the island, and very troublesome during the night. The larvae are to be seen in all artificial collections of water. Patton says of this mosquito in the Aden Hinterland that, "this is the most common mosquito in the district, and is practically found everywhere, breeding in springs, wells and puddles. It was found at Jehaf."

#### CULEX PUNGENS. Wiedemann (1828).

Auss. Zweiflügel. Ins., p. 9 (1828), Wiedemann; Mono. Culicid. II., 165 (1901), Theobald.

It is thought that this is distinct from *Culex fatigans* by certain collectors in the United States. I can trace no difference between it and *C. fatigans*, taking the American specimens sent me as being their so-called *pungens*, and still consider the two the same. If this is so the common brown tropical and sub-tropical mosquito must be called *pungens* and not *fatigans*, as the former was described before the latter on the same page.

#### CULEX LINEARIS. Skuse (1896).

Proc. Linn. Soc. N. S. Wales, 1747 (1896), Skuse; Mono. Culicid. II., 165 (1901), Theobald.

N. S. Wales.

Type in the Museum, N. S. W.

#### CULEX PUSILLUS. Macquart (1850).

Dipt. Exot. Supp. IV., 9 (1850), Macquart; Mono. Culicid. II., 166 (1901), Theobald.

Egypt.

#### CULEX FUSCANUS. Wiedemann (1821).

Dipt. Exot. I., 9, 8 (1821), Wiedemann; Mono. Culicid. II., 167 (1901), Theobald; Journ. Trop. Med., p. 384, Dec. 15 (1904), Giles.

Giles says: "Among my collection I find a specimen contributed by Dr. S. Cropper from Sidon in Asia Minor, which

corresponds with all the recorded characteristics of Wiedemann's species.

The insect is a *Culex* of almost uniform fuscous colouration. The wing is hyaline, with a very scanty armature of linear scales. Tarsi fuscous, unbanded. Abdominal segments very dark, with narrow grey apical bands, which almost expand into spots laterally. Thorax brown rounded, with four darker lines clothed with pale yellow curved scales in front, and golden ones especially dense about the roots of the wing behind.

Head with creamy narrow-curved and erect forked scales and lateral flat-scaled patches of the same tint. The proboscis is peculiar, disproportionately stout throughout, and quite spatulate at the end. The palpi but slightly exceed the proboscis in length, and are clothed with smooth brown scales, with a few pale ones near the base. Pleurae clothed with golden scales. The legs are yellowish-fuscous, with a minute paler spot on the knee and apex of the tibia.

A small species.

*Habitat*.—Sidon, Asia Minor. Wiedemann records it from the 'East Indies,' and Wallace from Singapore, Sarawak, etc.; but nothing corresponding sufficiently well to be identified with Wiedemann's description has, so far as I know, been received at the British Museum."

Also recorded Bengal and Malacca.

#### CULEX SALINARIUS. Coquillett (1904).

Ento. News., 15, 73 (1904), Coquillett: Mono. Culicid. IV., 421 (1907).

United States.

*Type* in the National Museum, Washington.

#### CULEX BIFOLIATA. Theobald (1905).

Journ. Eco. Biol. I., 31 (1905); Mono. Culicid. IV., 425 (1907).

Transvaal.

*Type* in the British Museum.

#### CULEX TRIMACULATUS. Theobald (1905).

Ann. Mus. Nat. Hung. III., 86 (1905); Mono. Culicid. IV., 427 (1907).

Bombay.

*Type* in National Museum, Budapest.

*CULEX TORTILIS.* Theobald (1903).

The Entomologist, XXXVI., 281 (1903); Mono. Culicid. IV., 428 (1907).

Kingston, Jamaica.

*Type* in the British Museum.

*CULEX NEAVEI.* Theobald (1906).

Sec. Rept. Gord. Coll., Well. Labs., 76 (1906); Mono. Culicid. IV., 429 (1907).

Lado, Lualas, Sudan.

*Type* in the British Museum.

*CULEX RUBINOTUS.* Theobald (1906).

Sec. Rept. Gord. Coll., Well. Labs., 78 (1906); Mono. Culicid. IV., 431 (1907).

Lualas, Sudan.

*Type* in the British Museum.

*CULEX PALLIDOCEPHALA.* Theobald (1904) (non Grossbeck 1905).

First Rept. Gord. Coll., Well. Labs., 73 (1904); Mono. Culicid. IV.,  
434 (1907).

Sennar, Blue Nile.

*Type* in the British Museum.

*CULEX DENTATUS.* Theobald (1905).

First Rept. Gord. Coll., Well. Labs., 75 (1905); Mono. Culicid. IV.,  
436 (1907).

Isana, through Damot, Abyssinia.

*Type* in the British Museum.

*CULEX INCONSPICUUS.* Grossbeck (1904).

Ent. News., 332, Dec. (1904), Grossbeck; Mono. Culicid. IV.  
438 (1907), Theobald.

New Jersey, U.S.A.

*CULEX OSAKAENSIS.* Theobald (1907).

Mono. Culicid. IV., 439 (1907).

Osaka, Japan.

*Type* in the British Museum.

*CULEX SIMPSONI.* Theobald (1905).

Journ. Eco. Biol. I., 28 (1905); Mono. Culicid. IV., 441 (1907).

Transvaal.

*Type* in the British Museum.*CULEX LAURENTI.* Newstead (1907).

Ann. Trop. Med. and Parasit. I., No. 1, 24 (1907).

Head grey; thorax brown; abdomen paler; legs uniformly pale brown; venter and pleurae pale dull orange-brown; proboscis unbanded.

"♀. Head with the narrow-curved scales pale silvery-yellow in front, the rest white; flat scales white; upright forked ones all black. Antennae dark brown, pubescence silvery-grey, in some lights with a faint yellow tinge. Proboscis clothed with brown scales and towards the apex a few scattered pale ochreous ones. Palpi very short, rich brownish-yellow; scales brown. Thoracic scales dull golden-yellow; pleurae with a few small groups of narrowly rounded white scales, some of which are practically spindle-shaped.

Abdomen uniformly pale brown.

Legs uniformly brown above with pale brown scales, silvery-grey beneath in some lights; coxae and trochantae rich brownish-yellow with dark brown scales; no knee spots and no bands on tarsi.

♂. Head scales as in the ♀. Palpi long, pale ochreous brown with pale brown scales, apical segments dark brown densely clothed with long hairs; antennae with silvery-brown hairs.

Thorax with a few white scales opposite the insertion of the wings; the rest including the pleural scales as in the ♀.

Legs pale ochreous beneath, darker above, with pale brown scales; anterior and mid femora with white scales at the sides posteriorly.

Abdomen pale brown with rather dark brown scales, segments 5, 6, 7 and 8 with a few lateral white scales; terminal segment with a broad apical band of creamy-white scales; venter pale ochreous, scales pale brown and white intermixed.

Wing scales dark brown on the basal half of the veins; apical portion with pale ochreous scales."

*Habitat*.—Leopoldville, Congo Free State (Oct. and Dec., 1903).

*Observations*.—Described by Newstead from two ♂'s and one ♀. The uniformly pale brown abdomen in the ♀ should easily separate this species and the apical pale band on the ♂ abdomen.

*Type* in collection School Tropical Medicine, Liverpool.

**CULEX BOSTOCKI.** Theobald (1905).

Journ. Eco. Biol. I., 23 (1905); Mono. Culicid. IV., 444 (1907).

Transvaal.

*Type* in the British Museum.

**CULEX MINUTUS.** Theobald (1905).

Journ. Eco. Biol. I., 30 (1905); Mono. Culicid. IV., 445 (1907).

Transvaal.

*Type* in the British Museum.

**CULEX PALLIDOTHORAX.** Theobald (1905).

Journ. Eco. Biol. I., 32 (1905); Mono. Culicid. IV., 446 (1907).

India.

*Type* in the British Museum.

**CULEX CHRISTOPHERSI.** Theobald (1907).

Mono. Culicid. IV., 453 (1907).

India.

*Type* in the British Museum.

**CULEX SPINOSUS.** Theobald (Lutz ms.) (1907).

Mono. Culicid. IV., 455 (1907).

Brazil.

*Type* in the British Museum.

**CULEX ALBOPLEURA.** Theobald (1907).

Mono. Culicid. IV., 456 (1907).

India.

*Type* in the British Museum.

**CULEX LATEROPUNCTATA.** Theobald (1907).

Mono. Culicid. IV., 458 (1907).

British Guiana (Supenaam, Essequibo).

*Type* in the British Museum.

**CULEX NEGLECTUS.** Lutz (in Bourroul) (1905).

Mosquitos do Brasil, 27 (1905); Mono. Culicid. IV., 459 (1907).

Cantarlira Hills, near São Paulo, Brazil.

**CULEX GRANDIDIERI.** Blanchard (1905). nov. nom.

*Culex flavus.* Ventrillon (1904) non Motshulsky (1859).

Bulletin des Museum, Paris, 550 (1904), Ventrillon; Les Moust., 627 (1905), Blanchard.

Madagascar.

**CULEX HALIFAXII.** Theobald (1903).

Mono. Culicid. III., 231 (1903).

Dindings, Malay States.

*Type* in the British Museum (Nat. Hist.).

This is not a true *Culex*, but more material is wanted to deal with it further.

The following species placed under *Culex* probably comes in a distinct genus :—

**CULEX (?) DIGITATUS.** Rondani (1848).

*Culex (?) albatarsis.* Neveu-Lemaire (1902); non Theobald (1901).

Studi Entomo. pubblicati per cura di Fl. Bandi e di E. Truqui I., 109, 90 Torino (1848), Rondani; Archives de Parasitologie VI., 10 (1902), Neveu-Lemaire.

Brazil; Guiana.

*Note.*—The insect which Neveu-Lemaire took for my *albitarsis* from Africa is evidently Rondani's *C. digitatus*.

The following three species come in a distinct genus from *Culex*, but have not been worked out microscopically, and the squamose characters and venation offer no means of separating them.

*CULEX (?) JAPONICUS.* Theobald (1901).

Mono. Culicid. I., 385 (1901); III., 158 (1903).

Tokyo, Japan; Ceylon.

Type in the British Museum.

*CULEX (?) JAPONICUS.* Theobald (1901).

var. *Ceylonica.* n. v.

Mono. Culicid. IV., 158 (1907).

I referred to this variety in the last volume, the specimen being spent by Mr. Green from Ceylon, another female was received in 1900 taken in the same locality, Peradeniya, but in June, not October.

The variety differs from the type in having more pronounced golden lines on the thorax—the hind femora white only along one patch of the base of the under side and more pronounced abdominal banding. I can see no reason to separate it as a distinct species.

*CULEX (?) AUREOSTRIATUS.* Doleschall (1857).

Natur. Tijdsch. v. Ned. Ind. Deel XIV., 385 (1857), Doleschall;

Mono. Culicid. I., 387 (1901), Theobald.

Amboina.

*CULEX (?) RIZALI.* Banks (1906).

Philip. Journ. Sci. I., 9, 999 (1906).

Head brown and golden; palpi white tipped; thorax with thin, golden parallel and looped lines dorsally and white pleural patches; abdomen brown and blue-black above, laterally and ventrally brown with white basal bands; legs uniformly brown and blue-black; metatarsi and tarsi basally white or cream banded.

*Length.*—5·5 mm. (♀ only.)

*Habitat.*—Negros Occidental, P. I., Volcano Canlaon, Mt. Siya—Siya, 760 metres.

*Note.*—This species is closely related to *Culex japonicus*, Theobald, but differs in:—

(1) the absence of basal white abdominal bands;

(2) yellow or golden scaled head (not white as in *japonicus*);

(3) by the median thoracic stripe being continued through the bare spot instead of on each side of it.

The following three large *Culicines* probably come in a distinct genus, but have not been worked out; they cannot be separated on scale structure or venation.

*CULEX (?) TIGRIPES.* Grandpre et Charmoy (1900).

*Culex maculicrura.* Theobald (1901).

Les Moust. (Planters. Gaz. Press), (1900), de Grandpre and de Charmoy; Mono. Culicid. II., 34, 65 (1901) Theobald; Handbk. Gnats, 407 (1902), Giles; Mono. Culicid. III., 227 (1903), Theobald; Journ. Trop. Med. VII., 368 (1904), Giles; Phil. Journ. Sci. I., 9, 988 (1906), Banks; Rec. Ind. Mus. II., pt. ii., No. 30, 298 (1908), Theobald; Ann. Trop. Med. and Par. II., No. 3, 262 (1908), d'Emmerez de Charmoy.

Sierra Leone, Bonny; Mombasa; Natal; Mashonaland; British Central Africa; Mauritius; Queensland.

*Additional localities.*—Mandalay, Upper Burma, 11. iii. 08 (N. A.); Kurseong, E. Himalayas, 5,000 feet, 4. viii. 08 (N. A.); Delagoa Bay, E. Africa (José F. Sant Anna), 1 ♂ and 1 ♀; Mpuma, Uganda, 2 ♂'s and 3 ♀'s (Sir David Bruce); Pampanga, Camp Stotsenberg, Angeles, P. I. (E. R. Whitmore); Calcutta; Damukdia Ghat, E. Bengal; Manipur (C. A. Gourlay); Sylhet, Assam (Major Hall); Port Canning, Lower Bengal; Accra, Ashanti (Graham); D'thala, Aden Hinterland; Elsenberg, Stellenbosch (C. G. H.), 1. 07; Fernwood, Cape Colony (bred from horse trough), collected 9. x. 06, emerged 16. x. 06 (per C. Lounsbury); Johnstone River, Queensland (Dr. Bancroft); Kirindi, Ceylon, S. P. (T. B. F.), 1 ♀, 20. xi. 08; Weligama, Ceylon, S. P., 3 ♀'s, 3. i. 08; Dondra, Ceylon, 1 ♀, 2. xii. 07 (E. Green); Hambantota, Ceylon, 1 ♀, 28. iv. 08; Mandulsima, Uva Province, Ceylon (T. B. F.), 14. xii. 08, 1 ♀.

*Time of capture.*—August to November in Calcutta; July, Damukdia Ghat; August, Manipur; February, April, May, at Sylhet, and in December; December, at Port Canning; June, at Accra.

*Observations.*—Bred from larva in barrel and another taken in latrine by Graham at Accra. D'Emmerez de Charmoy says very common and one of the largest species known in Mauritius. The larvae are carnivorous and eat one another. Patton found the larva at D'thala in an old tank containing rain water and feeding as *Culex fatigans*.

## CULEX TIGRIPES. Grandpre.

var. *consimilis*. Newstead (1907).

Ann. Soc. Trop. Med. and Para. I., No. I., 23 (1907), Newstead.

♀. Head with creamy-white, narrow-curved scales, in some lights with a faint trace of yellow; upright forked scales black with smoky-grey tips; median hairs golden-yellow. Thoracic scales chiefly of a greyish colour, with dark brown ones intermixed. Proboscis blackish-brown *with a broad and well defined* band of pale ochreous scales; labella pale ochreous-brown. Palpi black or brownish-black with a patch of pale bright ochreous scales at the articulation of the first long segment; apex with dusky white scales. Abdomen dark brownish-black with scattered pale brown scales and narrow basal bands; basal segment with two median black apical spots; sixth and seventh segments with two lateral apical pale spots. Legs as in the typical forms.

*Length.*—6·7 mm.

*Habitat.*—Tshumbri (July); Kasongo (February, April, May); Yambinga (September); Miambwe; Leopoldville, in the Congo Free State.

*Observations.*—Newstead records as follows:—"The example from Leopoldville was bred from a larva procured in a grass swamp near the terminus of the railway. It is important to note that three females and four males of the more typical forms were bred from larva obtained at the same time."

## CULEX TIGRIPES. Grandpre.

var. *bimaculata*. nov. var.

Legs with marked lines of creamy spots as in type. Thorax with two pronounced median small pale spots, a pale scaled line from each running backwards, also a pale scaled median spot near the head, an indistinct one on each side and some pale scales over the wings. Abdomen with the second to fifth segments dark with narrow yellow apical bands, the second to fourth each with two nearly median yellow spots; remaining apical area golden-yellow.

*Habitat.*—Meshra el Firaffe (H. King).

*Observations.*—Described from a single perfect ♀ bred by Mr. King. It forms a very marked and pretty variety, easily told by the spots on the abdomen.

**CULEX TIGRIPES.** Grandpre.var. *fusca*. nov. var.

No trace of abdominal banding, but traces of basal lateral pale spots; *abdominal hairs fuscous* (not pale as in the type). There are two pale scaled, round, thoracic spots on the dorsum.

*Length.*—5 mm.

*Habitat.*—Obuasi, Ashanti (15. xi. 07) (Dr. Graham).

*Observations.*—A small dark variety, bred from a larva in a hollow tree. I can see no structural difference from the large typical *C. tigripes*.

**CULEX (?) CONCOLOR.** Desvoidy (1825).

Mém. de la Soc. d'Hist. Nat. de Paris, IV., 405 (1825), Desvoidy; Mono. Culicid. II., 107 (1901), Theobald: Journ. Trop. Med. VII., 368 (1904), Giles; Gen. Ins. Culicid. 29 (1905), Theobald; Phil. Journ. Sci. I., 9, 986 (1906), Banks; Mosq. Philip. Isl., 9 (1908), Ludlow.

*Note.*—Giles places this in *Taeniorhynchus* (Journ. Trop. Med. Dec. 15, 383, 1904). It bears as far as I can see no resemblance to any member of that genus.

India; Straits Settlements; Burma; China.

*Additional localities.*—Pampanga, Camp Stotsenberg, Angeles P. I. (E. R. Whitmore) (in Banks); Phrapatoon, Siam, viii. 06 (Dr. P. G. Woolley); Samarang, Java (Jacobson and Piepers), 4 ♀'s, 1 ♂, i. 08, in Amsterdam Museum; Calcutta, 7. iii. 07; 4. vii. 07; 5. vii. 07 (6); 15. vii. 07; 17. vii. 07; 23. vii. 07; 31. vii. 07; in Zoological Gardens, 12. vii. 08 (2) and 26. vii. 08 (6) (N. A.); 3. 4. and 5. viii. 07 (N. A.); also in June, September, October and November (N. Annandale); Ballyganj, Calcutta (T. Bentham), 10. viii. 08 and 11. x. 08; Purneah, N. Bengal, 5. viii. 07 (C. Paiva); 6. viii. 07 (2); 4. viii. 07; Kulattupazha, W. base of W. Ghats, Travancore, 19. xi. 08, "In Bungalow" (Annandale); Port Canning, Lower Bengal, December; Damukdia Ghat, N. Bengal, July; Sylhet, Assam, February, April, May, December (Major Hall); Manipur, Assam, August (C. A. Gourlay); Andaman Islands, 1 ♂ and 1 ♀ (Ray White).

**CULEX CUMMINSSII.** Theobald (1903).

Mono. Culicid. III., 214 (1903).

Bahr-el-Ghazal, Central Africa ; Uganda.

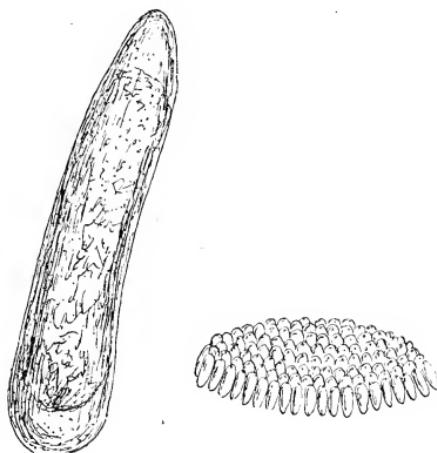


Fig. 173.

Ovum and egg raft of *Culex cumminsii*. Theobald.  
Egg, 864 × 21 mm. Raft, 3 × 1 mm. (C. M. Wenyon.)

*Type* in the British Museum.

The ova have been observed by Wenyon in the Sudan

(Species not identified.)

**CULEX QUADRIVITTATUS.** Coquillett (1902).

Canad. Entomo. XXXIV., 292 (1902).

Guatemala, 2,200 ft.

*Type* in National Museum, Washington.

**CULEX PALLENS.** Coquillett (1899).

Proc. U. S. Nat. Mus. XXI., 303 (1899), Coquillett; Mono. Culicid.  
II., 168 (1901), Theobald.

Japan.

*Type* in United States National Museum, No. 3963.

**CULEX DAMNOSUS.** Say (1882).

Journ. Acad. Philadelphia, III., 11, 3 (1882), America.

**CULEX FLAVUS.** Motshulsky (1859).

Catalogue des Insectes rapportés du fl. Amour, depuis la Schilka jusqu'à Nikolaëvsk, XXXII., 503 (1859).

Basin of the Amour.

I have been unable to consult this work.

**CULEX WAHLGRENI.** nov. nom.

*Culex fusculus.* Wahlgren (non Zetterstedt. 1850).

Arkiv. Zool. II., No. 7; p. 14.

**CULEX (?) ATROPALPUS.** Coquillett (1902).

Canad. Ent. XXXIV., 292 (1902), Coquillett; Mono. Culicid. IV., 401 (1907), Theobald, United States.

**CULEX ATRIPES.** Skuse (1899).

Proc. Linn. Soc. N. S. Wales, 1750 (1899), Skuse; Mono. Culicid. II., 801 (1901), Theobald.

Holmbush, Sutherland, Knapsack Gully, N. S. Wales.  
Position doubtful.

Type in the Museum, Sydney, N. S. Wales.

**CULEX (?) CONFINNIS.** Arribalzaga (1891).

Dip. Arg. La Plata, 49 (1891); Mono. Culicid. I., 382 (1901), Theobald.

Chacoin, Formosa, Argentine.

(Obscure species which can only be identified by types which cannot be traced.)

**CULEX LURIDUS.** Doleschall (1857).

Natuurkundig Tijdsch. voor Ned. Ind. D. XIV., 384 (1857), Doleschall; Mono. Culicid. II., 169 (1901), Theobald.

Middle Java (Gombong).

**CULEX RUFINUS.** Bigot (1888).

Exp. Scientif. d. l. Tunisie. Dipt. 7 (1888); Mono. Culicid. II., 169 (1901), Theobald.

Tunis.

**CULEX MOLESTUS.** Wiedemann (1821).

Zweifl. Ins. 544 (1821), Wiedemann; Mono. Culicid. II., 169 (1901),  
Theobald.

Sumatra.

**CULEX CALCITRANS.** Robineau Desvoidy (1827).

Essai sur les Culic. Mém. Soc. d'Hist. Nat. de Paris, 182 (1827);  
Mono. Culicid. II., 170 (1901), Theobald.

**CULEX RUBIDUS.** Robineau Desvoidy (1827).

Essai sur les Culic. Mém. Soc. d'Hist. Nat. de Paris, 404 (1827),  
R. Desvoidy; Mono. Culicid. II., 171 (1901), Theobald.

Carolina.

**CULEX OCHRIPES.** Macquart (1850).

Dipt. Exot. Supp. IV., II. (1850), Macquart; Mono. Culicid.  
II., 169 (1901), Theobald.

South America.

**CULEX SICULUS.** Robineau Desvoidy (1827).

Mem. d. l. Soc. d'Hist. Nat. d. Paris III., 406, 12 (1827).

Sicily.

**CULEX SETULOSUS.** Doleschall (1857).

Natuurkundig Tijdsch. von Ned. Ind. D. XIV., 381 (1857); Mono. Culicid.  
II., 170 (1901), Theobald.

Java.

**CULEX FILIPES.** Walker (1861).

Proc. Linn. Soc. V., 229 (1861), Walker; Mono. Culicid. II., 172 (1901),  
Theobald.

Dorey, New Guinea.

*Type* in the British Museum, but not sufficient left to be of  
any value.

**CULEX PINGUIS.** Walker (1867).

Science Gossip, 79 (1867), Walker; Mono. Culicid. II., 172 (1901),  
Theobald.

British Columbia.

**CULEX MERIDIONALIS.** Leach (1825).

Zool. Journ. N. VII., Oct. (1825), Leach; Mono. Culicid. II., 171 (1901),  
Theobald.

Nice.

**CULEX NICAEENSIS.** Leach (1825).

Zool. Journ. II., 292 (1825).

“C. capite, thorace abdomineque obscure brunneis ; abdomine segmentis omnibus posticè cinereo-marginatis ; pedibus cineras centibus, griseo-annulatis ; alis hyalinis iridescentibus, pterogosteis cineras centibus. Long. 10 mm.”

Nice, common.

**CULEX ANNULIFERUS.** Em. Blanchard (1852).

Insectos, in Cl. Gay. Hist. fisica y politica de Chile, VII., 332 (1852) ; Verhand. der k. k. Zool. bot. Ges. in Wien, XV., 595 (1865), Philippi.

Chile.

“C. testaceo-fuscus ; capite thoraceque aureo-squamulosis ; alis flaves centibus ; squamis flavis adspersis ; pedibus testaceis ; femorum tibiarum tarsorumque articulorum omnium apice fuscis. Long. corp. 2 lin.”

“Abdomen testace ; segments noir-obscur au bord postérieur. Pattes annelées de noir à l'extrémité des articles.” 4 mm.

**CULEX CHILENSIS.** R. Blanchard (1903), nov. nom.

*Culex variegatus.* Em. Blanchard (1852), non Schrank (1781), non Doleschall (1858).

Insectos, in Cl. Gay. Hist. fisica y politica de Chile, VII., 333 (1852), Em. Blanchard ; Verhand. der k. k. Zool. bot. Ges. in Wien, XV., 595 (1865), Philippi.

Chili (Arquero).

“C. fuscus ; antennis obscurioribus ; thorace fulvo, fusco-lineato ; alis hyalinis, parce squamulatis, maculis sparsis nigres centibus ; pedibus fusco-albidoque annulatis. Long. corp. 2 lin.  $2\frac{1}{2}$ .”

“Noir. Antennes noirâtres. Thorax noir fauve marqué de 3 lignes longitudinales obscures, la médiane beaucoup plus étroite que les latérales. Ailes transparentes, à peine enfumées, avec taches noirâtres éparses, les 3 plus grandes sur la costa. Frange

gris noirâtre. Pattes très pâles, presque blanchâtres ; articles noirs à l'extrémité. Long. 5 mm."

**CULEX PICTIPENNIS.** Philippi (1865).

Verhand. der k. k. Zool. bot. Ges. in Wien, XV., 596 (1865).

Chili (Santiago and province of d'Aconcagua).

"C. niger ; antennis pallide cinereis, apice nigris ; alis hyalinis antice maculis nigris ornatis ; pedibus cinereis tarsis (saltem ♂) longissimis, nigris, albo-annulatis. Long. fere 3 lin."

"Thorax parsemé de poils blanc de neige. Ailes à costa marquée de 2 grandes taches noirâtres séparées par une tache blanc de lait ; en outre de petites taches noires punctiformes. Balanciers noirs. Pattes extrêmement grêles ; tarses postérieurs largement 2 fois aussi longs que les "tibias, d'un brun clair ; marqués d'un cercle noir au milieu, en avant duquel est un anneau blanc plus étroit ; partie apicale, en arrière du cercle noir, toute blanche. Long. 6-7 mm."

**CULEX APICINUS.** Philippi (1865).

Verhand. der k. k. Zool. bot. Ges. in Wien, XV., 596 (1865).

Chili, at Santiago.

"C. nigro-fuscus ; capite et thorace piloso densissime aureo-squamulosis ; abdomine albo-annulato ; squamis alarum fuscis ; genubus, apice tibiarum omniumque tarsi articulorum niveis. Long. 2½ lin."

**CULEX MARMORATUS.** Philippi (1865).

Verhand. der k. k. Zool. bot. Ges. in Wien, XV., 597 (1865).

Chili.

"C. griseo-fuscus ; abdomine fusco et albo-marmorato ; squamis alarum fuscis ; pedibus pallide fuscis, concoloribus. Long. 3 lin., extens. alar. 4½ lin."

"Antennes, trompe, et palpes pâles, gris brunâtre ; palpes du ♂ très longuement velus. Thorax un peu plus foncé. Abdomen brun clair, marbré de petites ponctuations sombres et de taches blanches un peu plus grandes, dont une plus marquée sur chaque côté des segments. Pattes pâles, gris brunâtre ; les postérieures du ♂ longuement velues."

**CULEX ARTICULARIS.** Philippi (1865).

Verhand. der k. k. Zool. bot. Ges. in Wien, XV., 596 (1865).

Chili at Corral.

"C. nigro-fuscus ; thorace piloso et aureo-squamuloso ; squamulis alarum fuscis (abdomine nigro et albo-annulato?) ; pedibus fuscogriseis ; basi femorum albida, apice femorum tibiarumque niveo ; tarsis nigris. Long.  $2\frac{1}{2}$  lin."

**CULEX KERMORGANTI.** Laveran (1901).

C. R. de la Soc. de Biol. LIII., 568 (1901).

New Caledonia.

**CULEX LONGEFURCATUS.** Becker (1903).

Mitteilungen aus dem Zool. Museum in Berlin, II., 68 (1903).

Egypt.

**CULEX MELANORHINUS.** Giles (1900), nov. nom.

*Culex pallipes.* Macquart (1838), non Robineau Desvoidy (1827), non Meigen (1838).

Dipt. Exot. I., 33 (1838), Macquart ; Handbk. Gnats, 342 (1900), Giles ; Mono. Culicid. II., 171 (1901), Theobald.

Egypt.\*

**GENUS MICROCULEX.** Theobald (1907).

Mono. Culicid. IV., 461 (1907), Theobald.

No new species have been found to add to this genus, no fresh South American material having been examined.

**MICROCULEX ARGENTEOUMBROSUS.** Theobald (1907).

Mono. Culicid. IV., 461 (1907).

Rio Janeiro.

\* Other species of *Culex*, mainly from the United States, are given in the Appendix.

GENUS **PROTOCULEX.** Felt (1904).

Bull. 79, Ent. 22, N.Y. St. Mus., 391, d. App. (1904), Felt.; Mono. Culicid. IV., 463 (1907), Theobald.

No new species have been added to this genus as far as I am aware.

The three species tabulate as below :—

Thorax in ♂ and ♀ with a median stripe.

Thoracic stripe broad, silvery ..... *serratus*. Theobald.

Thoracic stripe narrow, creamy ..... *quasiserratus*. Theobald.

Thorax in ♂ with dense pale scales all over..... *dupreei*. Coquillett.

**PROTOCULEX SERRATUS.** Theobald (1903).

*Culex serratus.* Theobald (1903).

Mono. Culicid. II., 45 (1901), III., 191 (1903); IV., 464 (1907), Theobald.



Fig. 174.

Ovum of *Protoculex serratus*. Theobald (after Peryassu).

Widely distributed in the United States; Trinidad; Brazil; British Guiana.

The egg has been figured by Peryassu and is reproduced here.  
*Type* in the British Museum.

**PROTOCULEX QUASISERRATUS.** Theobald (1907).

Mono. Culicid. IV., 465 (1907).

Red Hills, Jamaica; Brazil.

*Type* in the British Museum.

## PROTOCULEX (?) DUPREEI. Coquillett (1904).

Canad. Entomo. XXXVI., 10 (1904), Coquillett; Mono. Culicid. IV., 466 (1907), Theobald.

Baton Rouge, Louisiana ; New Jersey.

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Genus **BANKSINELLA**. Theobald (1907).

Mono. Culicid. IV., 468 (1907).

Five species are now described in this genus, and three well marked varieties of the type species, *luteolateralis*, Theobald.

The species tabulate as follows :—

- α. Wings not adorned on costa, but with yellow and dark areas on the veins.
  - β. Proboscis unbanded.
    - Thorax with a golden-yellow stripe on each side ..... *luteolateralis*.\* Theobald.
    - Thorax all golden ..... *chrysothorax*. n. sp.
  - ββ. Proboscis with a distinct pale band.
    - A pale area at base of wings ..... *taeniarostris*. n. sp.
  - αα. Wings with marked black and yellow areas on the costa, resembling an anophelete ... *punctocostalis*. n. sp.
  - ααα. Wings uniform.
    - Thorax silvery anterior half, bright brown behind, abdomen metallic purple ..... *metallicus*. Theobald.

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\* The three varieties of *luteolateralis* may be known as follows :—

- Thorax with broad silvery lateral stripes and four narrow parallel median ones; abdomen with basal lateral spots, not bands ..... *pallida*. Theobald.
- Thorax with broad white lateral stripes and a white scaled median area; abdomen with basal median curved spots ..... *albothorax*. Theobald.
- Thorax with the lateral creamy stripes widening anteriorly and meeting behind head; abdomen with basal pale bands ..... *circumluteola*. Theobald.

**BANKSINELLA LUTEOLATERALIS.** Theobald (1901).

*Culex luteolateralis.* Theobald (1901).

Mono. Culicid. II., 71 (1901), Theobald; Handbk. of Gnats, 448 (1902), Giles: Journal Trop. Med. VII., 368 (1904), Giles; Gen. Ins. Culicid., 27 (1905), Theobald; Phil. Journ. Sci. I., 9, 987 (1906), Banks; Mono. Culicid. IV., 469 (1907), Theobald; Records. Ind. Mus. II., pt. iii., No. 30, 297 (1908), Theobald.

Durban, Natal; Salisbury, Mashonaland; Uganda; Blue Nile, Sudan; Gondokoro; Nile Provinces; Perak, Malay States.

*Additional localities.*—Pampanga, Camp Stotsenberg, Angeles, P. I. (E. R. Whitmore); Manila, P. I. (Banks); Sylhet, Assam (Major Hall); Katemas, Bihé, Angola, W. Africa (Dr. Creighton Wellman), 4 ♀'s.

*Time of capture.*—23. xi. 04 and x. 04 (Major Hall), Assam; 4. ii. 05 at Bihé (C. Wellman).

*Notes.*—Banks recording this species from Manila mentions that the Philippine species differ from the type by the presence in the ♀ of two parallel, sub-median orange-golden striae on the mesothorax for its entire length. In the ♂ these stripes are from about the middle to the posterior margin only. He also refers to the male antennal plumes being greyish-brown.

"This mosquito has the habit of constantly moving its hind legs up and down over the back while at rest upon the very low shrubbery and grass where it delights to hide. It settles and bites readily, and also bites when confined in vials." (Banks.)

Its distribution in the Philippines is gradually being notified from wider and wider localities.

var. *pallida*. Theobald (1907).

Mono. Culicid. IV., 470 (1907).

Inkutu, West Africa.

var. *albothorax*. Theobald (1907).

Mono. Culicid. IV., 470 (1907).

Inkutu, West Africa.

*var. circumluteola.* Theobald (1908).

The Entomol. XLI., 107, May 1908. Theobald.

Head like the type, also proboscis and antennae ; palpi of female all black. Thorax with creamy lateral areas, which unite in front, forming a continuous mass behind the head, the dark median area having only bronzy-brown scales and being narrowed in front.

The wings have more brown-scaled areas than the type, the only creamy-scaled veins being the basal half of the first long vein and the fifth, except its upper branch ; there are also pale lateral scales on the apical half of the sub-costal and a few indistinct ones on the basal part of the second and fourth veins. The stem of the first fork-cell is half the length of the cell and that of the second about two-thirds the length of the cell. Abdomen and legs as in type.

*Length.*—5 mm.

*Habitat.*—Transvaal (Simpson).

*Observations.*—Type variety in the British Museum. This differs from the type and other varieties in the pale lateral thoracic area extending around the front of the thorax, and by the less pale scaled areas of the wings.

#### BANKINSELLA CHRYSOTHORAX. nov. sp.

Thorax black with scattered golden scales all over it ; male palpi and proboscis deep brown ; plumes of antennae flaxen. Abdomen deep brown, with basal golden bands and brown hairs. Legs uniformly brown, but with a yellow band at the apex of the hind tibiae.

♂. Head black, with narrow-curved golden scales in the middle, black at the sides with black upright forked scales, golden chaetae between the eyes, dark ones at the sides ; clypeus brown ; proboscis deep brown ; palpi deep brown, a little longer than the proboscis, the long apical segment with a few long hairs on each side, of two segments only as in the type of the genus ; antennae with brown and flaxen plume-hairs and pale broad bands, narrow brown ones ; basal segment globular and almost black.

Thorax black, with scattered long narrow-curved golden scales ; scutellum black with narrow-curved golden scales and rich brown border-bristles ; pleurae rich brown with some paler flat scales ; metanotum black.

Abdomen deep brownish-black, with basal yellow bands and brown and dull golden hairs.

Legs unbanded, brown, femora pale beneath; a pale yellow spot at the apex of the hind tibiae; fore and mid unguis unequal, uniserrate, hind equal and simple, small.

Wings with short fork-cells, the first longer and narrower than the second, its base nearer the apex of the wing, its stem as long as the cell, stem of the second fork-cell about the same length as the cell; posterior cross-vein slightly shorter than the mid, about three times its own length distant from it. Male genitalia with the clasper short, broad, swollen in the middle with a long curved terminal spine.

*Length*.—3 to 3.3 mm.

*Habitat*.—Kumasi and Obuasi (Dr. Graham).

*Time of appearance*.—1. 2. 9. x. 07.

*Observations*.—Caught in bush at 10 A.M. A small species with golden-scaled thorax and very marked male claspers.

*Type* in the British Museum.



Fig. 175.

*Banksinella chrysosthorax*. n. sp.  
♂ clasper.

#### BANKSINELLA TAENIAROSTRIS. nov. sp.

Head golden-yellow in the middle; palpi black; proboscis dark brown with a narrow median pale band. Thorax deep brown; bright golden-yellow in front and around the sides, and with two thin parallel median yellow lines. Abdomen deep brown, unbanded, with basal lateral yellow spots. Legs unbanded, except for a pale band at the apex of the hind tibiae. Wings brown-scaled, except the base of the first long vein, which is yellow.

♀. Head clothed with bright golden-yellow narrow-curved scales in the middle, flat black scales at the sides, spreading well on to the vertex, some creamy flat ones right at the sides; bright yellow upright forked scales in the middle, dark at the sides, golden chaetae between the eyes, black ones at the sides; palpi black scaled, with black chaetae; proboscis bronzy-black with a median pale creamy band; antennae deep brown, with a bright brown basal segment; eyes golden around the edges, dark in the middle.

Thorax black, clothed with narrow-curved bronzy scales,

rich golden-yellow ones in front and around the sides, over the roots of the wings, and two thin parallel yellow median lines and some scattered ones behind; scutellum black with narrow-curved golden-yellow scales and bright brown border-bristles; metanotum black; pleurae brown with small patch of creamy scales.

Abdomen deep brown, unbanded, with basal lateral yellow patches, which pass upwards on to the dorsum on the last three segments; border-bristles dusky; venter with yellow basal and black apical bands.

Legs deep brown, unbanded, pale at the base and below; the hind tibiae with a broad yellow apical band and some ochreous scales in the middle and ochreous venter; unges all equal and uniserrate.

Wings brown-scaled, with the basal portion of the first



Fig. 176.  
Wing of *Banksinella taeniarostris*. ♀. n. sp.

longitudinal yellow-scaled, and some yellow scales on the base of the fifth; first fork-cell longer and narrower than the second fork-cell, their bases about level; stem of the former about half the length of the cell, stem of the latter about two-thirds the length of the cell; posterior cross-vein about one and a half times its own length distant from the mid cross-vein. Halteres with testaceous stem and fuscous knob.

*Length*.—3·5 to 4·5 mm.

*Habitat*.—Obuasi, Ashanti (Dr. Graham).

*Time of capture*.—2. ix. 07; 7. and 11. viii. 07; 8. xii. 07  
1. 2. 29. x. 07; 6. xii. 07; 12. vii. 07.

(Dr. Graham gives June, July, August, October, November, and December as dates of occurrence.)

*Observations*.—A long series caught in bush at 10 A.M., 3 P.M., 11 A.M., 6 P.M. They show some variation, one ♀ having the golden scales very dense over the thorax, and another shows a

greater quantity of pale scales in the middle of the hind tibiae ; in another the proboscis bands not very distinct. It much resembles *B. luteolateralis*, but is smaller in general form, and the marked proboscis band at once separates it. The pale scaled area at the base of the wings is also characteristic.

Type in the British Museum.

BANKSINELLA PUNTOCOSTALIS. nov. sp.

Head deep golden in the middle and at the sides, dark between ; proboscis black with a median yellow band. Thorax black with bronzy scales, deep bright golden all around the front and sides. Abdomen unbanded, with basal creamy lateral spots. Femora pale creamy-yellow with black apex ; hind tibiae golden with black base and a band near apex ; all the tibiae pale golden, ochreous ventrally ; metatarsi and tarsi black. Wings with yellow and brown scales, the costa mainly dark, except at the base, with two prominent creamy-yellow spots near the apex.

♀. Head dark with a median area of bright golden narrow-curved scales and yellow upright forked scales, flat black-scaled area at the sides, and then a flat creamy-scaled area, and pale scales around eye borders ; palpi black ; proboscis black with a prominent median golden-yellow band ; antennae black, basal segment bright ochraceous and, to some extent, the base of the second segment.

Thorax black with narrow-curved bronzy scales in the middle with a few scattered golden ones, dense bright golden scales around the front and sides forming a broad border to the dark area ; many golden scales behind ; scutellum with all golden narrow-curved scales ; metanotum black.

Abdomen black scaled, each segment with basal yellow lateral spots, last segment with many pale scales dorsally ; venter mainly pale creamy-yellow.

Legs, fore pair black except the apex of the tibiae and under side of the femora, the tibiae ochreous below ; hind legs very similar, but the femora paler basally ; hind pair with the femora all pale yellow except the apex, which is black, except just at the tip, where it is pale ; tibiae yellow, a broad black band at the base and a narrow one near the apex ; unguis equal and uniserrate.

Wings with the black costa with a line of yellow scales along its basal half, then all black, then a yellow patch at the junction of the sub-costal and another at the junction of the first long

vein ; sub-costal dark except where it joins the costa ; first long vein yellow at its basal half, then dark, then yellow again under the two costal spots ; second long vein dark, with yellow lateral scales before and at the fork, and at the apices of the branches, especially the outer branch under the apical costal spot ; third with a pale median spot ; fourth with some yellow lateral scales before the fork ; the basal area and up to just past the fork of the fifth yellow ; first fork-cell longer and a little narrower than the second, its base slightly nearer the base of the wing, its stem about one-third the length of the cell ; stem of the second posterior cell more than half the length of the cell ; posterior cross-vein about twice its own length distant from the mid.

*Length*.—4·5 mm.

*Habitat*.—Obuasi, Ashanti (Dr. Graham).

*Time of capture*.—7. viii. 07.

*Observations*.—Described from one ♀ caught in the bush. This is a very beautiful insect, which differs in ornamentation so much from the typical *Banksinella luteolateralis* that I have separated it as a distinct species. The markedly adorned wings are very pronounced, and give it an almost Anopheline appearance.

*Type* in the British Museum.

*BANKSINELLA METALLICUS*. Theobald (1901).

*Culex metallicus*. Theobald (1901).

Mono. Culicid. II., 63 (1901).

Bonny, West Africa ; Nisomba, Busago ; Wadelai (Christy).

*Type* in the British Museum.

### GENUS **MIMETECULEX**. Theobald (1908).

Third Rep. Well. Res. Labs. Gord. Coll., 258 (1908), Theobald.

Closely related to *Culex* and *Banksinella*, but differs from the former in the longer palpi of the female, and by having scales on the basal and second antennal segments, and from both in the male by having the palpi rather enlarged apically and with dense hair tufts, and composed of three segments, there only being two in *Banksinella*, and also by the male hind unguis being unequal.

Head clothed with narrow-curved and upright forked scales and flat lateral ones, broader in ♂ than ♀ ; palpi moderately

long in female, long in male, the two apical segments rather enlarged, tip blunt, hair tufts moderate size, two basal segments of the antennae with small scales. Thorax with very narrow-curved scales, prescutellar space scaly; scutellum with narrow-curved scales. Ungues of male all unequal.

A single species only so far known.

**MIMETECULEX KINGII.** Theobald (1908).

Third Rep. Well. Res. Labs. Gord. Coll., 258 (1908), Theobald.

Thorax rich reddish-brown with five dull yellowish lines, the outermost one shortest. Abdomen blackish-brown with basal creamy bands and an irregular creamy median line, widest on the posterior segments giving the appearance of two quadrangular dark spots on each segment. Legs ochreous, darkened above and at the tips. Wings with a yellowish tinge and with yellow and dark scales on the costa and first long vein.

♀. Head deep brown with narrow-curved creamy-yellow scales, slightly smaller and narrower and brighter just in front, thin, black, upright forked scales behind, long dark chaetae projecting towards the middle line and some golden ones in front, placed on the median area; eyes coppery. Antennae with bright testaceous basal segment, also the next three, gradually becoming deep brown, small black scales on the basal and second segment; verticillate hairs rather long, dark, internodal hairs short, pale. Proboscis ochreous, dark scaled at the tip. Palpi ochreous clothed with dark scales, through which the pale colour shows.

Thorax deep purplish-brown clothed with scanty, small almost hair-like, curved yellow and rich brown scales, the former arranged in broad lines, one median, extending to the prescutellar space which is scaly, then one on each side extending nearly back to the scutellum, and another below running from the base of the wings forwards for a short distance, looking somewhat paler than the others in certain lights; the median and lateral lines of chaetae dark in front, becoming golden, longer and denser behind, the median row ceasing before the scutellum; scutellum paler than the mesothorax with narrow-curved pale scales and border-bristles either dark or golden according to the light; metanotum brown with grey reflections at the sides and apex. Pleurae dark with one longish area of broadish pale scales passing down to the base of the first pair of legs, a smaller pale scaled area behind.

Abdomen with the basal segment pale ochreous with very pale scales and one or two scattered dark ones ; the second, third, fourth and fifth segments with broad basal pale scaled areas and a broad median area of pale scales, separating the dark scaled lateral areas, the sixth with still wider basal and median pale areas, and the seventh with a broad median pale area and a narrow black line on each side ; posterior border-bristles thin and pale, and there are also thin lateral bristles ; a paler scaled lateral line runs the whole length of the body with traces of darker scaled patches below ; venter pale.

Legs with ochreous scales and a few scattered dark ones, tarsi mostly dark scaled ; all the parts paler below, traces of pale knee spots ; femora, tibiae, and metatarsi with short bristles, pale in some lights, dark in others ; hind tibiae longer than the hind metatarsi ; unguis all equal and uniserrate.

Wings with faint yellowish tinge ; the costa with yellow scales and the base of the first long vein with some yellow scales,



Fig. 177.  
Wing of *Mineteculex kingii*. ♀. Theobald.

rest mostly dark, in certain lights the lateral scales of the second and fourth veins are pale ; fork-cells of moderate length, the first sub-marginal longer and narrower than the second posterior, its base very slightly nearer the base of the wing than that of the second posterior, its stem a little more than half the length of the cell ; stem of the second posterior about as long as the cell ; posterior cross-vein about its own length distant from the mid, which is the same size.

*Length.*—5 mm.

♂. Thorax as in the ♀, but the median pale line has a fine dark central line.

Head with rather larger grey scales showing ochreous colours in some lights, and a median bare line ; upright fork scales dark

at the back, brown in front ; some long, straight, dark chaetae, paler in median region. Antennae with flaxen plume-hairs, apical segments long, dark, not plumose ; palpi long, the two apical segments of about equal length, thick, the apical one rather narrow towards the tip which is blunt, ochreous basally, dusky towards the tips, hair tufts flaxen and brown of moderate size, apex of the ante-penultimate segment dark scaled, the penultimate with creamy scales on one portion.

Abdomen : much as in the ♀ but with more scattered pale scales, hairs brownish.

Legs darker than in the ♀, the femora show a more distinct pale line ; fore unguis unequal, both uniserrate, mid unequal both uniserrate, hind unequal but simple.

Wings with the first, third, and fourth long veins dark scaled, the costa with many yellowish scales ; fork-cells short ; first sub-marginal longer and narrower than the second posterior, their bases nearly level, stem of the former not quite as long as the cell, of the latter longer ; posterior cross-vein longer than the mid and more than its own length distant from it.

*Length*.—5 mm.

*Habitat*.—Sudan (H. King).

*Observations*.—Described from a perfect female and two males. It is a very marked species easily told by the thoracic adornment. It is very variable in colour according to the light but has a general yellowish-brown hue. The male unguis are very marked ; it is the only mosquito I have seen in which the hind pair are unequal, and this and the palpi and wing scale structure excludes it from any previously described genus.

*Type* in the British Museum.

#### GENUS **LOPHOCERATOMYIA**. Theobald (1905).

Ann. Mus. Nat. Hung. III., 93 (1905) ; Mono. Culicid. IV., 471 (1907).

This genus now contains four species.

#### **LOPHOCERATOMYIA FRAUDATRIX**. Theobald (1905).

Ann. Mus. Nat. Hung. III., 94 (1905) ; Mono. Culicid. IV., 474 (1907).

Friedrich-Wilhemshafen, Stephanoff, Astrolabe Bay, in New Guinea.

*Types* in National Museum, Budapest.

**LOPHOCERATOMYIA UNIFORMIS.** Theobald (1905).

Journ. Bombay Nat. Hist. Soc. XVI., 245 (1905); Mono. Culicid. IV., 473 (1907).

Peradeniya, Ceylon.

*Types* in the British Museum.

**LOPHOCERATOMYIA BREVIPALPUS.** Theobald (1905).

Ann. Mus. Nat. Hung., 96 (1905); Mono. Culicid. IV., 477 (1907).

Singapore.

*Type* in National Museum, Budapest.

**LOPHOCERATOMYIA BICORNUTA.** Theobald (1910).

Rec. Ind. Mus. IV. 25 (1910).

Head of male very similar to *L. fraudatrix*, but the antennal organs quite distinct. Thorax rich brown. Abdomen dark

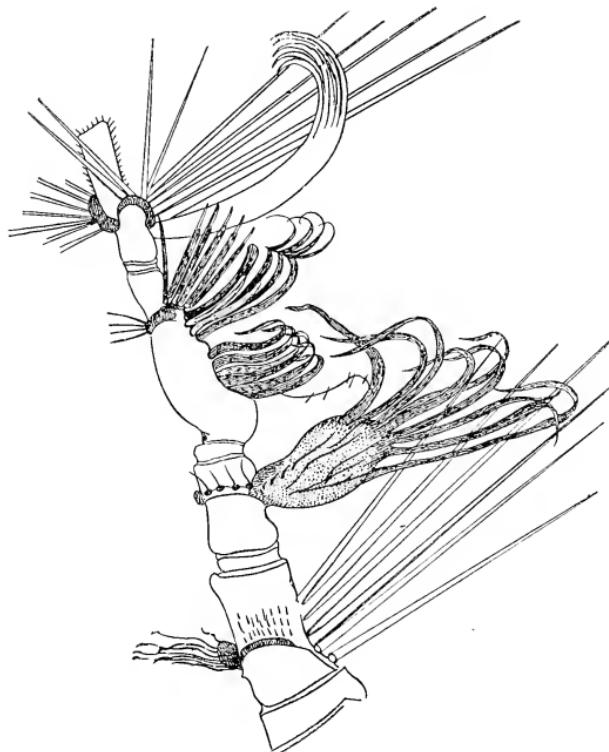


Fig. 178.

Antennal organs of *Lophoceratomyia bicornuta*. ♂. Theobald.

brown unbanded, ochreous ventrally. Legs brown unbanded, base of femora paler. Two prominent lateral horn-like processes on the basal segments of the antennae.

♂. Head similar to that of *L. fraudatrix*. Palpi brown, a little longer than the proboscis, bluntly acuminate, the apical



Fig. 179.

Wing of *Lophoceratomyia bicornuta*. ♂. Theobald.

segment slightly longer than the penultimate, the whole palpi with short, scanty hairs; no trace of the basal process seen in *fraudatrix*. Antennae plumose, plume hairs brown, internodes pale, basal segment with a large horn-like process on the inner side as in *brevipalpus*, with a series of fine hairs on the upper side; antennae organs on four segments of the curious form figured, page 412.

Thorax rich brown, showing two median parallel brighter brown broad lines; covered scantily with very small curved brown to bronzy scales, brown to deep brown chaetae; scutellum paler with similar scales and four black border-bristles to the mid lobe; metanotum brown.

Abdomen deep brown, unbanded, pale hairs; venter ochreous-brown.

Legs brown, unbanded, fore and mid unguis unequal, the former uniserrate, the mid simple; hind small, equal and simple.

Wings with rather short fork-cells, the first sub-marginal longer and narrower than the second posterior, its base very

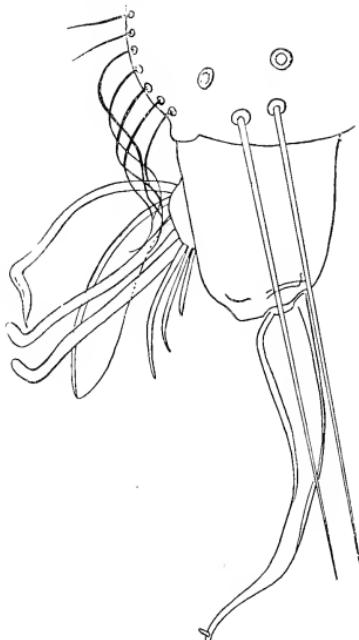


Fig. 180.

*Lophoceratomyia bicornuta*.  
Theobald.  
♂ genitalia.

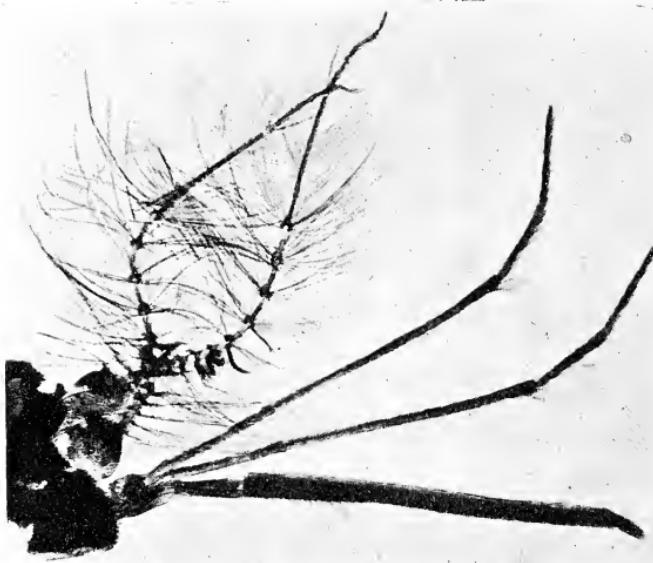


Fig. 181.  
*Lophoceratomyia bicornuta*. ♂. Theobald. Head.

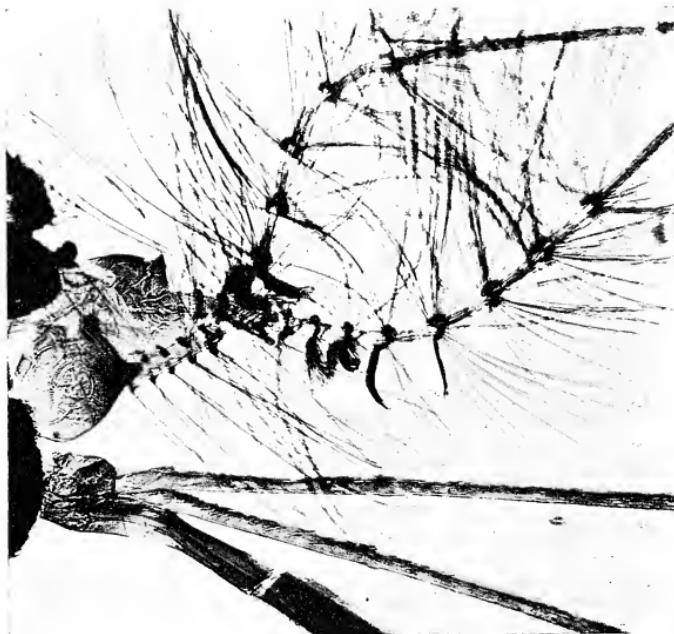


Fig. 182.  
*Lophoceratomyia bicornuta*. Theobald. ♂. Antennal organs.

little nearer the apex of the wing than that of the latter, its stem slightly longer than the cell, stem of the second posterior cell longer than the cell; mid cross-vein longer than the supernumerary, the posterior longer than the mid, not quite twice its own length distant from it.

*Length.*—4·5 mm.

*Habitat.*—Dawna Hills (base), near Kawkarech, L. Burma.

*Time of capture.*—4. iii. 08 (Annandale).

*Observations.*—Described from a single dissected ♂. Closely related to *L. fraudatrix*, Theobald, but differs in the antennal organs, the absence of the accessory process at the base of the palpi and in wing venation.

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**GENUS TRICHOPRONOMYIA.** Theobald (1905).

Ann. Mus. Nat. Hung., 98 (1905); Mono. Culicid. IV., 479 (1907).

Two species so far described in this genus.

**TRICHOPRONOMYIA ANNULATA.** Theobald (1905).

Ann. Mus. Nat. Hung. III., 98 (1905); Mono. Culicid. IV., 479 (1907).

Friedrich-Wilhelmshafen, New Guinea.

*Type* in National Museum, Budapest.

**TRICHOPRONOMYIA MICROANNULATA.** Theobald (1907).

Mono. Culicid. IV., 481 (1907).

Stanley Town, New Amsterdam.

*Type* in the British Museum.

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GENUS **PECTINOPALPUS.** nov. gen.

Head clothed with narrow-curved scales, except at the sides and around the eyes in front, and some upright forked scales; antennae plumose; palpi of male as long as the proboscis, irregular in form, of three segments, basal one swollen at base, apical twice as long as the penultimate, both with rather long

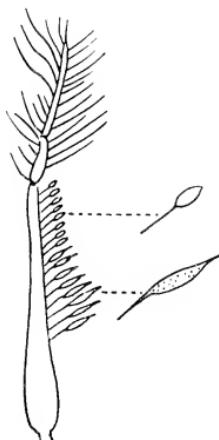


Fig. 183.  
Genus *Pectinopalpus.*  
♂ palp.

lateral hairs, the long segment with a series of outstanding scales of peculiar form in two groups of different shape. Thorax and scutellum with long narrow-curved scales.

A very distinct genus, told at once by the peculiar ♂ palpi. I have been unable to find the ♀.

**PECTINOPALPUS FUSCUS.** nov. sp.

Uniformly fuscous brown. Fragile. Palpi very irregular and twisted in form.

♂. Head black with pale smoky-grey narrow-curved scales over most of the area, dusky grey flat lateral scales and almost white ones around the eyes. Palpi and proboscis deep brown; antennae brown with pale bands and flaxen plume-hairs; the palpi have eight pale outstanding scales on long stalks on one side of the apical area of the long segment, and then eight dark long outstanding scales below of different form.

Thorax brown with dull brown and dull, pale golden, rather long narrow-curved scales and deep brown chaetae; scutellum

paler brown, with narrow-curved pale scales and six brown bristles to the mid lobe; metanotum pale brown.

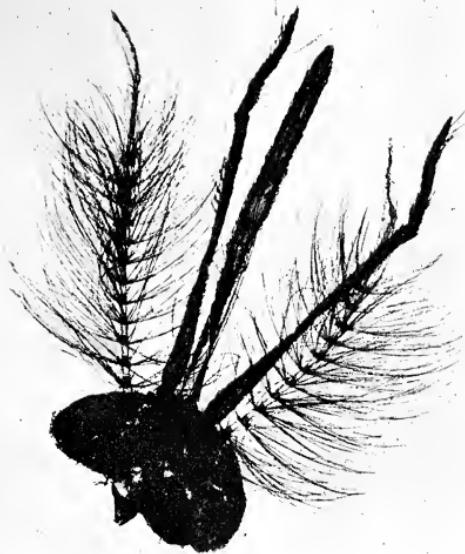


Fig. 184.  
*Pectinopalpus fuscus*. ♂. n. sp. Head.

Abdomen uniformly fuscous brown.

Legs uniformly brown; femora and coxae paler, the former especially below; fore and mid unguis unequal and uniserrate, hind equal and simple.

Wings with rather broad scales on the apex, with rounded

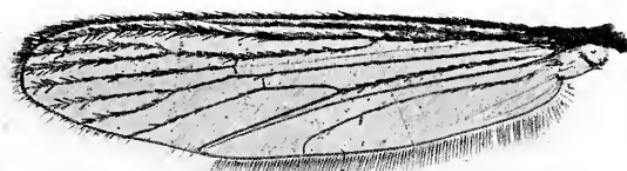


Fig. 185.  
Wing of *Pectinopalpus fuscus*. ♂. n. sp.

tips; first fork-cell longer and narrower than the second, its base about level with that of the latter, its stem more than half the length of the cell, stem of the second forked cell about the same

length and about two-thirds the length of the cell; posterior cross-vein longer than the mid, about twice its own length distant from it.

*Length.*—2·8 to 3 mm.

*Habitat.*—Obuasi, Ashanti (Dr. Graham).

*Time of capture.*—20. viii., 29. and 30. ix. 07.



Fig. 186.

♂ genitalia of *Pectinopalpus fuscus*.  
n. sp.

*Observations.*—Caught in bush at 10 A.M. and 6 P.M.

A very obscure species, unless carefully examined, when the peculiar palpi at once separate it. I have been unable to distinguish the female in this collection.

#### GENUS **TAENIORHYNCHUS.** Arribalzaga (1899).

Dipt. Argent., 47 (1899), Arribalzaga (mod. Theobald); Mono. Culicid. II., 190 (1901); IV., 483 (1907), Theobald.

Fourteen species at least come in this genus which are tabulated here. Six other species have been described as *Taeniorhynchus*, but the descriptions are not sufficiently definite to say whether they are not, and they are placed at the end of the table as doubtful.

I have recently seen a paper by Giles\* on this genus.

\* Journ. Trop. Med., p. 382, Dec. 15 (1904).

In the genus *Taeniorhynchus* he places *Culex mimeticus*, Noé, and *Culex bigotii*, Bellardi.

## TABLE OF SPECIES.

- A. Abdomen unbanded, with lateral basal pale spots.
  - a. Legs basally pale banded.
    1. Thorax dark brown, a broad pale median line of golden scales, 2 pale scaled lines in front and 2 behind... *fasciolatus*. Arribalzaga.
    2. Thorax unadorned; chestnut-brown scaled; wings mottled..... *richardii*. Ficalbi.
    3. Thorax unadorned; wings brown scaled; proboscis banded..... *arribalzagae*. Theobald.
  - aa. Legs unbanded.
    4. Abdomen metallic violet; basal lateral creamy spots ..... *violaceus*. Theobald.
    5. Abdomen golden ochreous; apex of wing pale above..... *luteoabdominalis*. Theobald.
    6. Abdomen purple sheen, basal lateral white spots; thorax with golden scales in lines cephalad, dark scales caudad..... *aureosquamata*. Ludlow.
- B. Abdomen with basal pale bands.
  - a. Legs basally pale banded.
    7. Thorax brown scaled in middle, paler at sides..... *perturbans*. Walker.
  - β. Legs with basal pale bands or spots.
    8. Thorax dark brown with white curved scales with 2 brown bar-like spots on posterior  $\frac{1}{3}$  and 2 round brown spots near head end; wings brown scaled ..... *argenteus*. Ludlow.
  - γ. Legs unbanded.
    9. Thorax dark brown with heavy brassy yellow band at sides extending V-shaped form cephalad from base of each wing ..... *lineatopennis*. Ludlow.
- C. Abdominal segments with median pale scaled areas basally, apically as 2 pale scaled spots.
  - 10. Legs basally pale banded and tibiae spotted; wings mottled ..... *walsinghamii*. Theobald.
- D. Abdomen apically pale banded.
  - a. Legs basally pale banded.
    11. Abdominal bands silvery-white; thorax rich brown, golden scaled, a paler V-shaped mark on each side... *confinnis*. Arribalzaga.

12. Abdominal bands yellow; thorax brown, scattered golden scales, paler over wing roots ..... *ager*. Giles.  
 β. Legs apically and basally pale banded.  
 13. Abdomen with apical bands on last few segments; thorax pale scaled on front  $\frac{2}{3}$ rds, palest behind, remainder dark; wings brown scaled *tenax*. Theobald.  
 E. Abdomen with narrow basal and broad apical pale bands, a dark lateral line on each side of segments most pronounced apically.  
 14. Wings pale towards tip ..... *epidesmus*. Theobald.

The following have been described in this genus, but cannot be definitely located:—*niger*, Giles, *whitmorei*, Giles, *flareolus*, Coquillett, *palliatus*, Coquillett, *signipennis*, Coquillett, and *sienensis*, Ludlow.

The latter Miss Ludlow now says “lies probably near *Finlaya*.” \*

**TAENIORHYNCHUS FASCIOLATUS.** Arribalzaga (1891).

Rev. d. Mus. d. l. Plata, 80 (1891), Arribalzaga; Mono. Culicid. II., 192 (1901), Theobald.

Navarro in Argentine; Rio de Janeiro, São Paulo, Lower Amazon, Brazil.

*Additional locality.*—Mano, Brazil, xii. 02 (Fajardo).

**TAENIORHYNCHUS RICHARDII.** Ficalbi (1896).

*Culex richardii.* Ficalbi (1896).

Bull. Soc. Ent. Ital., 261 (1896), Ficalbi; Mono. Culicid. II., 194 (1901).

Sutton, Norwich, Wye, England; Italy; Toronto, Canada.

*Additional localities.*—Vento and Bortegrave, Holland. 1 ♀ and 1 ♂. vi. and vii. 04, in Amsterdam Museum.

**TAENIORHYNCHUS ARRIBALZAGAE.** Theobald.

Mono. Culicid. III., 261 (1903).

Para, Brazil.

*Type* in the British Museum.

\* Canad. Entomo. XXXVIII., 132, April (1906).

## TAENIORHYNCHUS VIOLENCEUS. Theobald (1908).

Third Rept. Well. Res. Labs., 262 (1908), Theobald.

Thorax black, with pale creamy scales in front with faint greenish reflections. Abdomen metallic violet, with small basal lateral creamy spots. Legs unbanded violet, paler at base.

♀. Head shiny black, with narrow-curved scales, of a pale creamy colour with a faint tinge of pale green in some lights; long upright black forked scales and flat pale lateral ones; antennae black, basal segment globose shiny, with a few curved hairs; palpi rather long, dark scaled; proboscis dark with violet reflections.

Thorax shiny black, with long narrow-curved scales, the front half with scales of a pale creamy colour showing pale green in

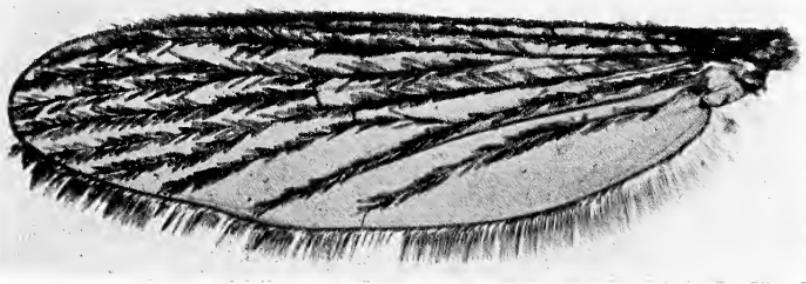


Fig. 187.

Wing of *Taeniorhynchus violaceus*. ♀. Theobald.

some lights, the posterior half with bronzy scales, except just in front of the bare space before the scutellum; chaetae long and black, especially over the base of the wings; scutellum pale with narrow-curved pale scales and black border-bristles, four large ones to the mid-lobe and several very small ones; pleurae with patches of pale scales; metanotum deep brown.

Abdomen clothed with metallic violet scales, the first segment with dusky scales and long brown fine hairs, the second and following segments with small basal lateral creamy spots; posterior border-bristles brown, lateral ones pale golden to brown; venter dusky.

Legs uniformly metallic violet; femora testaceous at the base and below; spines on the femora, tibiae and metatarsi thick and black; unguis dark, equal and simple.

Wings with typical *Taeniorhynchus* scales dark; the first

sub-marginal cell longer, but no narrower than the second posterior cell, their bases about level; stem of the first sub-marginal cell less than one half the length of the cell; stem of the second posterior not quite one-third the length of the cell



Fig. 188.

Wing of *Taeniorhynchus violaceus*. ♂. Theobald.

posterior cross-vein, about twice its own length distant from the mid; halteres with pale stem and fuscous knob.

*Length.*—5 mm.

♂. Palpi slightly longer than the proboscis, deep violet black



Fig. 189.

*Taeniorhynchus violaceus*. Theobald. ♂ head.

with black hair tufts with violet reflections, apical segment shorter than the penultimate; antennae with dark plume-hairs. Fore unguis unequal, the larger biserrate, the smaller simple; mid

unequal, the large biserrate, the smaller simple; hind equal and simple. The claspers of the genitalia are of peculiar form.

Wings with rather short fork-cells, first sub-marginal longer and narrower than the second posterior, its stem more than half the length of the cell; stem of the second posterior cell not quite as long as the cell; posterior cross-vein not quite twice its own length distant from the mid cross-vein.

*Length*.—5·5 mm.

*Habitat*.—Sudan (H. King); Katemas, Bihé, Angola 3 ♂'s and 1 ♀ (Dr. Creighton Wellman).

*Time of capture*.—2. ii. 05 and 26. iii. 05 at Bihé (C. W.), taken at dusk at 10 P.M.

*Observations*.—Described from two ♀'s and one ♂ from the Sudan. The bright thoracic adornment and the brilliant abdomen at once enables the recognition of this species. The male claspers are very marked. The Angola specimens were faded and do not show the pale green hue in the thoracic scales.

The types in the British Museum.

#### TAENIORHYNCHUS LUTEOABDOMINALIS. Theobald (1910).

Rec. Ind. Mus. IV., 23 (1910).

Thorax brown marbled with bright yellowish-brown and grey scales on the front two-thirds, the rest bright brown scaled, the pale scales most prominent on the posterior edge of the brown and pale scaled area, also traces of a dark curved lateral line on each side before the wings. Head yellowish-brown, slightly darkened at the sides, pale around the eyes; proboscis with a broad pale band, slightly darkened at the base and apex. Abdomen entirely clothed with golden ochreous scale. Legs unbanded, ochreous with slightly darkened tarsi. Wings with yellowish-brown scales, the apex paler above.

♀. Head brown, clothed with narrow-curved pale scales, especially around the eye border, bright ochreous upright forked scales in the middle, darker ones at the sides, small flat pale lateral scales; clypeus brown; palpi clothed with brown scales, a few pale ones dotted about and many at the apex; proboscis with



Fig. 190.  
*Taeniorhynchus violaceus*.  
Theobald.  
♂ genitalia.

a broad pale band, the dark base and apex with a few scattered pale scales ; antennae brown, basal half gradually becoming bright testaceous.

Thorax brown, the front two-thirds mainly clothed with very pale grey narrow-curved scales, particularly prominent on the posterior border of this region, two ochreous-brown scaled spots in front amongst the pale scales, and a somewhat nude dark, curved line on each side in front of the roots of the wings, the hinder region of the mesothorax with mostly golden-brown narrow-curved scales, but some pale ones arranged in lines ; two prominent lines of rich golden-brown chaetae behind and similar coloured chaetae over the roots of the wings ; scutellum pale ochreous with small narrow-curved pale scales and nine bright golden-brown posterior border-bristles to the mid-lobe ; metanotum brown ; pleurae brown and bright ochreous with some patches of small dull creamy flat scales.

Abdomen clothed with bright golden ochreous scales, the second, third and fourth segments with a band towards the base, then bases of similar coloured scales, darkened at their apices, not forming distinct bands, last segment with two median lateral dark spots ; venter all golden ochraceous, also the whole of the first segment, which has many pale golden thin hairs ; posterior border-bristles pale golden.

Legs uniformly ochreous but with some dark scattered scales on the femora, with very pale reflections, no trace of banding ; unguis equal and simple.

Wings with yellowish-brown scales, the outer part of the apex slightly paler scaled ; first sub-marginal cell longer and narrower than the second posterior cell, its base nearer the base of the wing, its stem not quite half the length of the cell, stem of the second posterior nearly two-thirds the length of the cell ; posterior cross-vein about twice its own length distant from the mid ; halteres very pale ochreous, almost creamy-white.

*Length.*—4·8 mm.

*Habitat.*—Katihar, Purneah District, N. Bengal (C. A. Paiva).

*Time of capture.*—4. and 5. x. 08.

*Observations.*—Described from a single perfect ♀. It comes very near *Taeniorhynchus epidesmus*, described previously, but the total absence of leg banding, the more marked thoracic ornamentation and more marked pale wing spot, separate it from that species. If it is the same it is a most marked variety.

*Type* in the Indian Museum, Calcutta.

## TAENIORHYNCHUS (?) AUREOSQUAMATA. Ludlow (1909).

Canad. Entomo. XLI., p. 101, March (1909), Ludlow.

" ♀. Head dark brown, with whitish and yellow curved scales from occiput to vertex, dark brown, almost black fork scales at occiput, and light yellowish-white flat scales laterally; antennae brown, verticels and pubescence brown, white, unscaled at the joints; palpi dark brown; proboscis dark brown; eyes brown, partly contiguous; clypeus brown.

Thorax dark brown; prothoracic lobes with a few bristles; mesonotum with bright golden or brassy-coloured slender-curved scales arranged in lines on the cephalad half, the caudad half very dark brown, long brown bristles, especially over the wing joint; pleurae dark brown, with white scaled spots; scutellum light, almost bare, very slender curved light and brown scales arranged in the sub-median lines, the apices directed laterally, four long bristles on the median, and three on the lateral lobes, otherwise practically nude; metanotum brown, nude.

Abdomen densely covered with dark brown scales, with purple iridescence and tiny basal lateral white spots on some segments; venter mostly dark scaled, but some basal light bands

Legs: coxae and trochanters light, femora ventrally light, and slightly so at the bases, more marked on the hind legs, the remainder of the legs dark, with purple and gold reflections; unguis simple and equal.

Wings clear and heavily scaled with long *Taeniorhynchus*-like scales; first sub-marginal cell a little longer and narrower than the second posterior, about the length of the stems; the posterior cross-vein longer than the mid about its own length.

*Length*.—6 mm., of which 2·2 is proboscis.

*Habitat*.—Parang, Mindanao, P. I.

Taken in December.

The wing scales suggest *Taeniorhynchus*, but the eyes are more contiguous than is usual in that genus and the scutellar scaling is peculiar. The colouring suggests already described *Taeniorhynchi*, but the legs are entirely unbanded."

*Type* in the Army Medical Museum, Washington, D.C.

TAENIORHYNCHUS PERTURBANS. Walker (1856).

*Culex perturbans.* Walker (1856).

Ins. Saund. I., 428 (1856), Walker; Mono. Culicid. II., 201 (1901); IV., 486 (1907), Theobald.

United States.

*Additional localities.*—British Columbia (Dyar), rare; Augusta Arsenal, Ja.; Fort Du Pont, Del.; Fort Ethan Allen, Ver.; Fort Fremont, S.C.; Fort Hancock, N.J.; Maryland; Fort Morgan, Ala.; Fort Sheridan, Ill.; Fort Snelling, Minn.; Westlawn Cemetery, Ohio; Fort Logan, H. Roots, Ark.; Massachusetts, New York; Fort St. Philip, La.; Fort Williams, Mt. Washington Barracks, D.C., U.S.A. (Ludlow).

*Type* in the British Museum.

TAENIORHYNCHUS (?) ARGENTEUS. Ludlow (1905).

Canad. Entomo. XXXVII., 98 (1905), Ludlow; Philip. Journ. Sci. I., 9, 989 (1906), Banks; Mosq. Philip. Isl., 10 (1908), Ludlow; Mono. Culicid. IV., 487 (1907), Theobald.

Pampanga, Angeles, Luzon, Philippine Islands.

*Note* by Miss Ludlow:—

“Some time since my attention was called to a general resemblance between *Taeniorhynchus argenteus*, Mihi., and *Culex*



Fig. 191.

Wing of *Leucomyia argentea*. Ludlow (by Ludlow).

*gelidus*, Theobald. I have, therefore, compared the two carefully and find the following differences: As to proboscis, *C. gelidus* yellow, with a brown band near the apex; *T. argenteus* brown, with broad white band. As to thorax, *C. gelidus* has a heavy

white marking extending about two-thirds the length of the dorsum, the caudal third being of the yellowish-brown of the scutellum. *T. argenteus* has the white marking extending over the whole mesonotum and scutellum, with the exception of two oblong spots near the caudal end of the mesonotum. These seem to differentiate the insects, and there are besides these some scale differences which seem to throw it into *Taeniorhynchus* instead of *Culex*.\*

*Type* in the Army Medical Museum, Washington, D.C.

**TAENIORHYNCHUS LINEATOPENNIS.** Ludlow (1905).

Canad. Entomo. XXXVII., 133 (1905), Ludlow; Philip. Journ. Sci. I., 9, 989 (1906), Banks; Mosq. Philip. Isls., 10 (1908), Ludlow; Mono. Culicid. IV., 489 (1907), Theobald.

Camp Gregg, Bazambang, Luzon, Philippine Islands.

*Type* in Army Medical Museum, Washington, D.C.

**TAENIORHYNCHUS WALSINGHAMII.** Theobald (1901).

Mono. Culicid. IV., 484 (1907).

Runaway Bay, Jamaica.

*Type* in the British Museum.

**TAENIORHYNCHUS CONFINNIS.** Arribalzaga (1891).

Dipt. Argent. La Plata, 49 (1891), Arribalzaga; Mono. Culicid. III., 289 (1903), Theobald.

Chaca in Formosa, Argentine; Cara Cara Creek, Demerara River, British Guiana; Trinidad; Para.

**TAENIORHYNCHUS AGER.** Giles (1901).

Entomologist, XXXIV., p. 196, July (1901), Giles; Mono. Culicid. II., 199 (1901), Theobald; Mosq. Philip. Isls., 9 (1908), Ludlow; Rec. Ind. Mus. II., pt. iii., No. 30, 299 (1908), Theobald.

Madras; N.W. India; Ceylon; Kuala Lumpur, Malay States.

*Additional localities.*—Philippine Islands (Ludlow); Sylhet, Assam (Major Hall); West Lake, Hangchow, China, one ♀, 27. vi. 07 (C. E. Cornford); Mandalay, U. Burma, 12. xi. 08 (N. A.); Calcutta, 2. xi. 08 (N. A.); Pallode, 20 miles N.E. of

\* Since the above was in type Miss Ludlow has sent me the figure reproduced on p. 426 and says it is a *Leucomyia*.

Trivandrum, Travancore, 14. xi. 08 (Annandale); Kerumaadi, S. end of Venibanaad Lake, Travancore, 6. xi. 08 (N. A.); Balighai, near Puri, Orissa, 26. x. 08 (Annandale).

*Time of capture.*—January, February, April and May at Sylhet.

*Observations.*—Some of the Sylhet specimens measured 6 mm. in length.

**TAENIORHYNCHUS TENAX.** Theobald (1901).

Mono. Culicid. II., p. 198 (1901); III., 288 (1903); First Rep. Well. Res. Labs. Gord. Coll. Khart., 78 (1908); Ind. Mus. Rec. II., pt. iii., No. 30, 299 (1908), Theobald.

Perak, Malay States.

*Additional localities.*—Sylhet, Assam (Major Hall); Manipur (C. A. Gourlay); Balighai, near Puri, Orissa (Annandale), in Indian Museum, Calcutta; Andaman Islands. 1 ♀. (Ray White).

*Time of capture.*—March to June at Sylhet; August at Manipur; October at Balighai, 1 ♀ at light, rather smaller than the type.

*Type* in the British Museum.

**Var. *maculipes arabiensis*.** Patton (1905).

Journ. Bomb. Nat. Hist. Soc. XVI., 635 (1905).

Patton says as follows:—

"This species [evidently meaning var.] is closely related to the type, except that the abdomen is very distinctly banded, and all the femora have basal pale bands. The joints are all banded. In all other respects it corresponds with the type."

*Habitat.*—In the springs at D'thala, and at Hardeba, and in the river at Nobat. The *larva* is described as being green with a long thin siphon. It is always found in pools with much *spirogyra*. It rests below the surface below the green strands, and is thus most difficult to find. It can remain a long time below the surface, only very occasionally coming up for air.

**Var. *maculipes*.** Theobald (1905).

First Rept. Gord. Coll. Well. Labs., 79 (1905).

Kenissa, White Nile and Middle Sobat.

*Type* in the British Museum.

Var. *ocellata*. Theobald (1907).

Mono. Culicid. IV., 488 (1907).

Sarawak (Kuching); China.\*

Type in the British Museum.

**TAENIORHYNCHUS EPIDESMUS.** Theobald (1910).

Rec. Ind. Mus. IV., 22 (1910).

Thorax brown, mottled with creamy scales and some grey ones in front of the roots of the wings; proboscis pale with a narrow black base and broader black apex. Abdomen black with very narrow golden ochreous basal bands and very broad apical ones, a dark lateral line on each side of the segments most pronounced on the apical ones, the penultimate all golden ochreous, the apical with two deep black spots. Legs ochreous brown with apical and basal pale banding on the darker tarsi. Wings with a yellowish tinge, brownish scales and a pale spot towards the tip on the costa.

♀. Head brown, clothed with pale creamy and ochreous narrow-curved scales and broadly expanded black upright forked scales, paler in the middle of the head, chaetae brown and pale ochreous; clypeus ochreous; palpi black scaled with some ochreous scales and creamy scaled apices; proboscis with a very broad ochreous pale band, base and apex black; antennae brown towards the apices, testaceous towards the base.

Thorax deep brown, clothed with creamy and brown narrow-curved scales, some paler before the roots of the wings, giving it a mottled appearance; some short, thick, black chaetae just before the roots of the wings, long brown and ochreous ones over the roots and behind them; scutellum brown, with small, narrow, pale scales and golden-brown, long border-bristles; metanotum pale ochreous with a grey sheen; pleurae brown and ochreous with patches of flat pale scales and golden hairs.

Abdomen brown with violet reflections, basal segment golden ochraceous with two small dark patches of scales; the remaining segments with narrow basal and very broad apical bright golden ochreous bands, except the last segment, which has two prominent black spots; the other segments have more or less marked thin black lateral lines, except on the last two or three apical seg-

\* *Vide* Vol. III., p. 259.

ments where there are pale creamy lateral spots ; venter ochreous yellow.

Legs ochreous with scattered dark scales, prominent at the apices of the femora and tibiae and on their upper surfaces ; tarsi slightly darker with apical and basal pale bands except on the last tarsal ; unguis equal and simple.

Wings with brown scales, a pale ochreous spot towards the tip on the costa and first long vein ; the first sub-marginal longer and narrower than the second posterior, its base slightly nearer the base of the wing, its stem nearly one-fourth the length of the cell ; stem of the second posterior not quite half the length of the cell ; posterior cross-vein about twice its own length distant from the mid. Halteres pale ochreous, with some small flat pale ochreous scales on the knob.

*Length.*—5·5 mm.

*Habitat.*—Bhogaon, Purneah District, N. Bengal (C. A. Paiva).

*Time of capture.*—2. x. 08.

*Observations.*—Described from a single perfect ♀. The very bright and marked abdominal banding will at once separate this from other *Taeniorhynchus*, together with the marked thorax.

Type in the Indian Museum, Calcutta.

#### TAENIORHYNCHUS (?) NIGER. Giles (1904).

Journ. Trop. Med., 383, 384, Dec. 15 (1904).

The following is Giles' description :—

“ Wing black. Band of proboscis sharply defined, rather narrow, placed at the middle. Abdominal segments sooty with narrow white bands of uniform width. Tarsal banding extremely minute, especially on distal joint. Thorax sooty grounded, with deep golden-brown curved scales, rather paler at the sides behind. A very sombre species, with apical lateral spots to the abdominal segments, not visible from above, and the venter impure white, with narrow black bands across the apices of the segments.”

Under supplemental characters (p. 384) Giles gives the following :—

“ Head with a median area on the occiput, clothed with golden falciform scales like those of *Howardina*, and also with two strong brown bristles projecting forwards between the antennae. Nape densely clothed with yellow and brown forked scales ; lateral flat-scaled areas with a black spot behind the eyes, enclosed in a loop of white. Palpi brown with white tips. Scutellum with

yellowish falciform scales; pleurae and coxae with some whitish bars and specks. Halteres entirely pale yellow, densely scaled.

This species closely resembles *C. impellens*, Walker, in ornamentation, but differs in having snowy apical lateral spots on all but the last abdominal segment; *C. impellens* having simply basal bands, besides which, of course, the dense scaly armature of the wing, though the scales are rather narrow for the genus, is alone sufficient to distinguish them. Rather over medium size."

*Habitat*.—Antigua; July 21, 1907, from a collection sent by Dr. Forrest.

*Note*.—I have been unable to see the type. No one could identify it from the description, but it is apparently not a *Taeniorhynchus*. Co-type in British Museum.

#### TAENIORHYNCHUS (?) WHITMOREI. Giles (1904).

Journ. Trop. Med., 367, Dec. 1 (1904), Giles; Philip. Journ. Sci. I., 9, 989 (1906), Banks; Mosq. Philip. Isls., 9 (1908), Ludlow.

"Wings uniformly dark-scaled, unspotted. Tarsi with some joints minutely basally banded yellowish, but not on first joints. Ground colour of thorax fuligenous, densely clothed with white falciform scales, not arranged to form definite ornament. Abdominal segments fuscous, with rather paler brown patches of truncate triangular outline along the middle line, and a line of pale scales all round the borders of the terga. Proboscis black, with a broad yellowish band beyond the middle.

Head with a sooty ground densely clothed with falciform scales in front, and with white and fuscous erect forked scales in varying proportions, mostly on the nape, and a few strong white bristles projecting forwards between the antennae; lateral flat-scaled areas snowy; basal joints of antennae densely white-scaled; palpi very small, dark, with a few white scales at the tip. Halteres with pale stem and ferruginous knobs. Femora mottled with black and white scales. No knee or tibio-tarsal spots. Venter impure white-scaled.

A rather small species.

*Habitat*.—Philippine Islands. Caught in the woods."

The above is Giles' description. Banks gives the locality Pampanga, Camp Stotsenberg, Angeles, P. I. (E. R. Whitmore).

Type in the British Museum.\*

\* Mr. H. F. Carter has examined the type and says it is a distinct *Leucomyia*.

TAENIORHYNCHUS (?) FLAVEOLUS. Coquillett (1905).

Proc. Ent. Soc. Wash. VII., 4, 182 (1905).

TAENIORHYNCHUS (?) PALLIATUS. Coquillett (1906).

Canad. Entomo. XXXVIII., 61 (1906).

"Proboscis wholly black scaled; palpi mixed black and yellow, occiput and mesonotum golden-yellow scaled, a large spot on the posterior half of the mesonotum almost devoid of scales (rubbed); \* pleura with several spots of whitish ones. Abdomen black scaled, with a strong tinge of purple, a spot of yellow scales at bases of the third and fourth segments, and of white ones at base of each of the following three segments; a patch of white scales on the outer front angles of each segment; venter black scaled and with a median stripe of yellow ones on the first four segments. Legs black scaled, those on the under side of each femora yellow, a spot of white scales at apex of each femora; base of first joint of each tarsus white scaled; tarsal claws simple. Wings hyaline, scales brown, narrow, lanceolate and linear intermixed.

*Length.*—About 3 mm.

*Habitat.*—Trinidad (Urich)."

TAENIORHYNCHUS (?) SIERRONIS. Ludlow (1905).

*Culex variopalpus.* Coquillett (?) (1902).

Canad. Entomo. XXXVII., June (1905) and XXXVIII., p. 132, April (1906),  
Ludlow.

United States.

The position of this species seems so doubtful I have not attempted to place it.

Miss Ludlow says, "probably lies near *Finlayi*." †

TAENIORHYNCHUS (? *Culex*) SIGNIPENNIS. Coquillett (1904).

Proc. Ent. Soc. Wash. VI., 167 (1904).

Fort Bliss, Texas, Ludlow.

Described as a *Taeniorhyncus*, but reads like a *Culex*.

\* *Query.*—Is not this the usual bare space in front of the scutellum?  
—F. V. T.

† Canad. Entomo., 132, April (1906).

GENUS **CHRYSOCONOPS.** Goeldi (1905).

Os Mosq. no Para. 114 (1905), Goeldi; Mono. Culicid. IV., 491 (1907), Theobald.

Thirteen distinct species occur in this genus, which is found in S. America, Africa, Australasia and Asia.

The species tabulate as follows:—

## A. Legs unbanded.

## a. Abdomen unbanded.

1. Thorax and abdomen orange ..... *aurites*. Theobald.
2. Thorax black, with pale scales;  
abdomen black, with metallic  
violet reflections ..... *nigra*. n. sp.
3. Thorax ochraceous-brown; abdo-  
men ochraceus ..... *ochraceus*. Theobald.

## aa. Abdomen pale banded basally.

4. Thorax golden-yellow scaled;  
abdomen violet-brown and me-  
tallic violet; 4th segment  
basally yellow, 5th basally  
yellow; apex yellow scaled ... *pygmaeus*. Theobald.
5. Thorax ochreous, with two dark  
areas behind, or all dark; all  
abdominal segments with basal  
yellow bands and apical purple  
ones; fork-cells very short ..... *brevicellulus*. Theobald.
6. Thorax golden-yellow, brown  
markings; abdomen orange-  
yellow; first four segments  
with apical purple bands and  
traces on other segments ..... *acer*. Walker.

## AA. Legs banded.

## a. Abdomen unbanded.

7. Thorax shiny black; abdomen  
orange; wings with no dark  
apex ..... *nigrithorax*. n. sp.
8. Thorax yellow in front, darker  
behind; abdomen ochreous;  
wings brown at apex; costa  
yellow ..... *fulvus*. Wiedemann.
9. Thorax shiny black, with golden  
scales; abdomen orange; hind  
tibiae with large black tufts of  
scales in the middle ..... *cristatus*. Theobald.

## aa. Abdomen banded.

10. Thorax golden-yellow, with purple  
patches; abdomen orange-  
yellow, apices of segments 2-5  
purple ..... *conopas*. Frauenfeld.

11. Thorax ochreous, with four dark spots; abdomen dark at base, golden near apex, with dark apical bands; wings black scaled near base ..... *pseudoconopas*. n. sp.
12. Thorax brown, with brown and yellow scales, the brown as a patch on each side in front; abdomen yellow, with dark apical bands; wings with mostly yellow scales, some black lateral ones ..... *annettii*. Theobald.
- aaa.* Banded or not.
13. Abdomen ochraceous with dusky scales, some yellow ones variously disposed, mostly on apical segments and on the apices and middle of the segments; thorax yellow, with dark sides, golden-yellow scales; wings all dusky brown scales ..... *fuscopennatus*. Theobald.

**CHRYSOCONOPS AURITES.** Theobald (1901).

*Taeniorhynchus aurites.* Theobald (1901).

Mono. Culicid. II., 209 (1901); III., 269 (1903); IV., 493 (1907),  
Theobald; Mosq. Philip. Isls. 9 (1908), Ludlow.

Bonny, West Africa; Entebbe, Uganda; Dindings, Perak,  
Kuala Lumpur, Malay States.

*New localities.* — Philippine Islands (Ludlow); Entebbe, Uganda, 2 ♀'s, 1 ♂ (Capt. E. D. W. Greig, I.M.S.), 1905 (310), Mus. Coll.; Mpuma, Uganda, 1 ♀ (Sir David Bruce); West Lake, Hangchow, China, 1 ♀ (C. E. Cornford).

*Type* in the British Museum.

**CHRYSOCONOPS NIGRA.** nov. sp.

Head, thorax and abdomen all dark brown; head and thorax with very pale golden to almost silvery narrow-curved scales. Abdomen with metallic violet reflections. Legs uniformly dark brown with bronzy reflections, ochreous at the bases. Wings with all brown scales.

♀. Head deep brown, with narrow-curved pale scales, pale flat lateral scales and brown upright forked scales, brown chaetae projecting forwards over the eyes; clypeus, palpi and proboscis black, antennae dark, basal lobe black.

Thorax shiny black with narrow-curved pale scales, almost silvery; chaetae dark brown; scutellum brown with narrow-curved pale scales and four posterior border-bristles to the mid lobe; metanotum black; pleurae deep brown with patches of pale flat scales.

Abdomen black with metallic violet reflections, venter black but with traces of pale apical bands on the last few segments.

Legs unbanded, deep brown with bronzy and metallic violet reflections in certain lights, bases and base of under side of femora ochreous; femora and tibiae spinose; unguis equal and simple.

Wings with dense brown scales; fork-cells rather short; the first a little longer and narrower than the second, its stem about one-third the length of the cell, stem of the second about the same length; posterior cross-vein shorter than the mid, about three times its own length distant from it.

*Length*.—6 mm.

*Habitat*.—Angola (Dr. Creighton Wellman).

*Observations*.—Described from a single ♀. Its general dark colouration at once separates it from all other *Chrysoconops*.

*Type* in the British Museum.

*CHRYSOCONOPS OCHRACEUS*. Theobald (1903).

*Taeniorhynchus ochraceus*. Theobald (1903).

Mono. Culicid. III., 263 (1903).

Kuala Lumpur, Malay States.

*Type* in the British Museum.

*CHRYSOCONOPS PYGMAEUS*. Theobald (1908).

Ind. Mus. Rec. II., pt. iii., No. 30, 300 (1908), Theobald.

Head and thorax golden-yellow, proboscis and palpi ochreous with dusky scales, especially at the tip of the proboscis. Abdomen violet-brown with some basal creamy bands and yellow scaled apex. Legs unbanded, ochreous-brown. Wing scales brownish; fork-cells rather small.

♀. Head yellowish-brown, clothed with creamy-yellow narrow-curved scales, dense golden-yellow upright forked scales and golden chaetae. Eyes black and silvery. Palpi rather long, ochreous with rather transparent dusky scales and black chaetae; proboscis ochreous, clothed with metallic violet-brown scales, antennae brown with pale bands at the verticels and testaceous basal segments.

Thorax bright reddish-brown, shiny, clothed with golden-yellow curved scales and golden-yellow chaetae; scutellum similarly adorned, with two large golden posterior border-bristles on each side of the mid lobe and two very small ones between, metanotum golden-yellow; pleurae yellow and brown with two patches of silvery-white flat scales.

Abdomen clothed with brown and metallic violet scales, the fourth segment with a basal yellow scaled band, the next with a more prominent one, and the apical segments with many yellow scales, hairs golden.

Legs ochreous, clothed with brown scales which darken toward the end, base and under side of femora with ochreous scales, in some lights the leg scales show violet reflections; chaetae brown, unguis dark, equal and simple.

Wings with brownish scales; fork-cells rather short; the first sub-marginal a little longer and narrower than the second

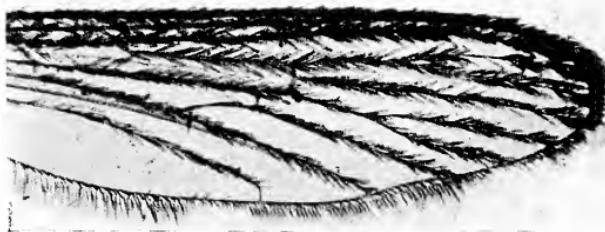


Fig. 192.  
Wing of *Chrysocnops pygmaeus*. ♀. Theobald.

posterior, its base a little nearer the apex of the wing than that of the latter, its stem nearly two-thirds the length of the cell, stem of the second posterior a little more than half the length of the cell, posterior cross-vein not quite twice its own length distant from mid. Halteres pale yellow.

*Length*.—4 mm.

♂. Head ochreous-brown with small narrow-curved golden scales and rich golden-brown upright forked scales and golden chaetae; palpi and proboscis black, the apical segment a little more than half the length of the penultimate, bluntly acuminate, long dark hairs on the last two segments. Antennae brown with white internodes and dark brown plume hairs.

Thorax shiny bright brown with narrow-curved golden scales and golden chaetae.

Abdomen ochreous when pointed from the light, dark when

to the light, of violet hue, the latter showing only on the apical borders in some lights. Genitalia with the claspers curved on

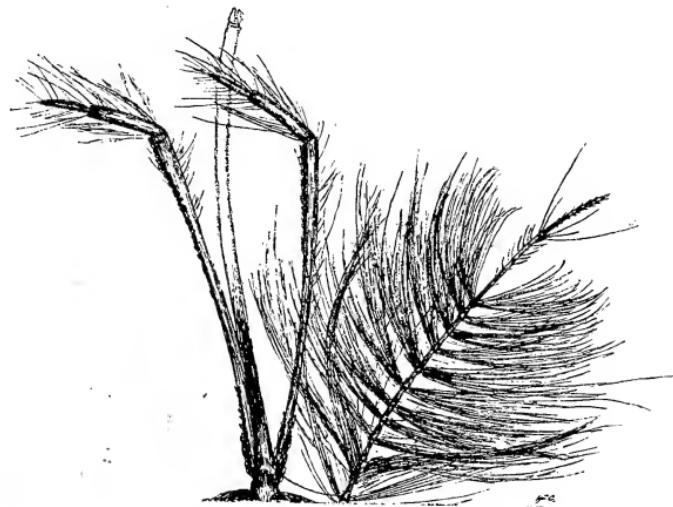


Fig. 193.  
*Chrysoconops pygmaeus*. ♂ head (enlarged).

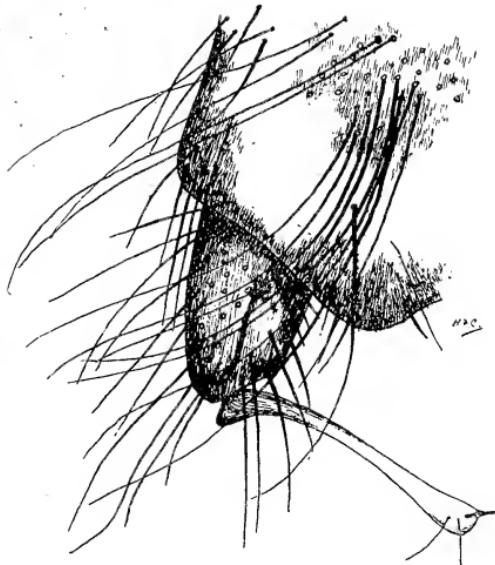


Fig. 194.  
*Chrysoconops pygmaeus*. Theobald.  
♂ genitalia (greatly enlarged).

themselves, broader and flat apically with a short, thick, subapical dark spine.

Legs uniformly dark brown with ochreous reflections, pale at

their bases ; fore unguis unequal, the larger with a small lateral basal tooth and a very large one near the middle, the smaller simple ; mid unguis unequal, the smaller simple, the larger with a large basal tooth and a narrower and more basal central one ; hind unguis equal and simple.

Wings with short fork-cells, the first longer and narrower than the second, its base nearer the apex of the wing, its stem as



Fig. 195.  
Wing of *Chrysococonops pygmaeus*. ♂. Theobald.

long as the cell ; stem of the second posterior as long as the cell ; posterior cross-vein as long as the mid, about twice its own length distant from it.

*Length*.—5 mm.

*Habitat*.—Sylhet, Assam (Major Hall) ♀ ; Purneah, N. Bengal (C. Paiva) ; Rajmahal, Bengal and Calcutta (N. Annandale).

*Time of capture*.—6. viii. 07 ; 31. vii. 07 ; 17. vii. 07.

*Observations*.—The ♀ described from a single specimen. One ♂ cotype in the British Museum collection. It comes near *C. brevicellulus*, Theobald, but can at once be told by the completely golden thorax, smaller size and different venation. Annandale says the eyes of the ♂ are green in life.

*Types* in the Indian Museum, Calcutta.

#### CHRYSOCONOPS BREVICELLULUS. Theobald (1901).

*Taeniorhynchus brevicellulus*. Theobald (1901).

Mono. Culicid. II., 212 (1901) ; III., 268 (1903) ; IV., 492 (1907), Theobald ; Rec. Ind. Mus. II., pt. iii., No. 30. 300 (1908), Theobald.

Selangor ; Perak ; Dindings ; Kuala Lumpur, Malay States ; Mukerian, Hoshiarpur, India ; Ceylon.

*Additional localities*.—Calcutta ; Sylhet, Assam ; Sangar,

Manipur Hut ; Manipur (in Indian Museum, Calcutta) ; Trincomalee, Ceylon (E. Green), 1 ♂ and 1 ♀ (in British Museum) ; Samarang, Java, 2 ♂'s (Jacobson), in Amsterdam Museum.

*Time of capture*.—August in Calcutta ; February, May and June at Sangar ; August, Manipur.

*Observations*.—Taken on wall of bungalow in Manipur in August.

*Type* in the British Museum.

**CHRYSOCONOPS ACER.** Walker (1848).

*Taeniorhynchus acer*. Theobald (1801).

*Culex acer*. Walker (1848).

List. Brit. Mus. Dipt. 7 (1848), Walker ; Mono. Culicid. II., 211 (1901).

New Zealand ; Queensland.

**CHRYSOCONOPS NIGRITHORAX.** nov. sp.

Head pale golden-yellow speckled with black ; palpi yellow speckled with black ; proboscis yellow at base, black at apex. Thorax dark with scattered golden scales. Abdomen uniformly

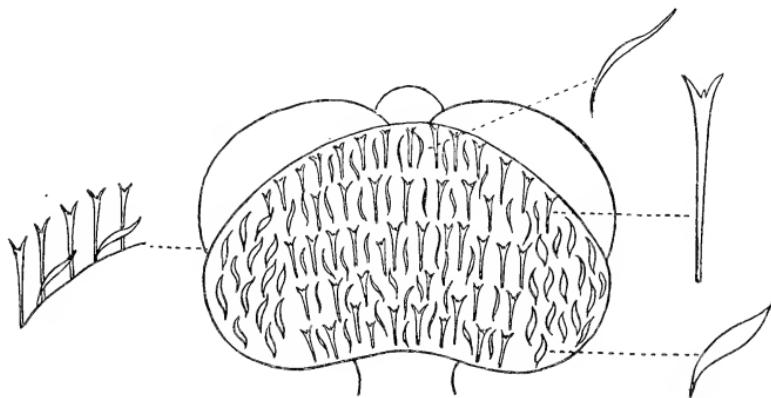


Fig. 196.

*Chrysoconops nigrithorax*. ♀. n. sp. Head.

yellow. Legs very dark with broad pale metatarsal and tarsal bands. Wings tinged with yellow, with brown scales.

♀. Head black with scattered pale golden narrow-curved scales and long thin black upright forked scales all over the surface ; paler rather broader curved scales at the sides ; eyes large, silvery ; palpi yellowish with scattered black and yellow scales ; proboscis yellow scaled at the base, black scaled on the

apical half; antennae brown, yellowish at the base, basal segment dark, second segment with some small flat black scales.

Thorax black, shiny, with scattered narrow-curved golden scales, paler near the scutellum; scutellum black with pale golden narrow-curved scales; chaetae black. The scales are scanty, so that the thorax looks black; metanotum black; pleurae black and dull yellow with white spots.

Abdomen entirely clothed with golden-yellow scales; a few scales may show pale iridescent reflections in certain lights; border-bristles golden; venter golden.

Legs with the femora black, except at the base where they are dull yellow, with black chaetae; tibiae all black with black chaetae; metatarsi with broad creamy-yellow basal bands, first fore and mid tarsals with broad pale basal bands, hind legs with an extra pale basal band on the second tarsus; unguis equal and simple. The black of the legs shows coppery and metallic tints in certain lights.

Wings with a yellowish tinge, the scales brown in some lights, dull yellow in others; fork-cells rather short, the first longer and narrower than the second, its base very little nearer the base of the wing, its stem a little more than half the length

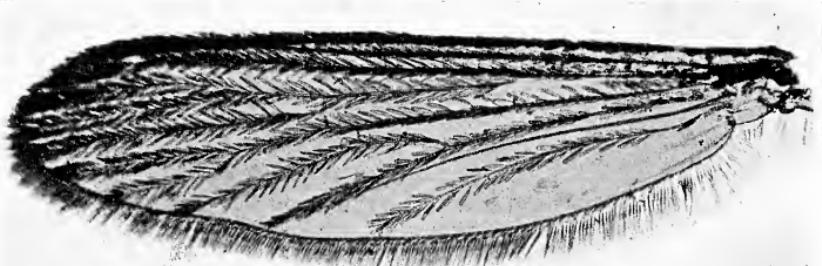


Fig. 197.  
Wing of *Chrysococonops nigrithorax*. ♀. n. sp.

of the cell; stem of the second fork-cell not quite two-thirds the length of the cell; posterior cross-vein about one and a half times its own length distant from the mid; scales dense especially apically.

*Length*.—6 to 6·5 mm.

♂. Thorax, abdomen and legs as in the ♀, but the abdomen with long golden lateral hairs; palpi yellow, black at the apex with black and golden hair-tufts; a creamy band at the base of

the penultimate segment; the golden hairs mostly on the apex of the ante-penultimate; apical segment not quite as long as the

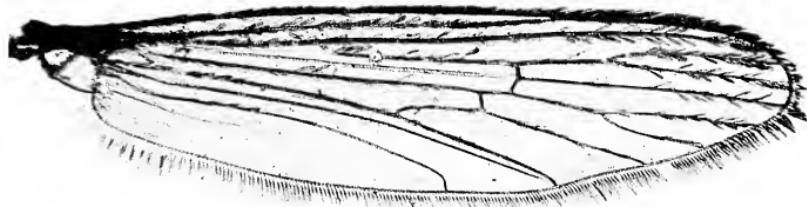


Fig. 198.

Wing of *Chrysoconops nigrithorax*. ♂. n. sp.



Fig. 199.

*Chrysoconops nigrithorax*. ♂. n. sp. Head.

penultimate, acuminate; palpi longer than the proboscis by the apical segment and one-third of the penultimate. Antennae

with flaxen-brown plume-hairs. Fore and mid unguis very unequal, the larger with a large tooth, the smaller simple.

Wings with the first fork-cell longer and narrower than the second, its base nearer the apex of the wing, its stem a little more than half the length of the cell. Stem of the second fork-cell not quite as long as the cell; posterior cross-vein sloping towards the mid rather more than its own length distant from it. Male claspers long, expanded in the middle.

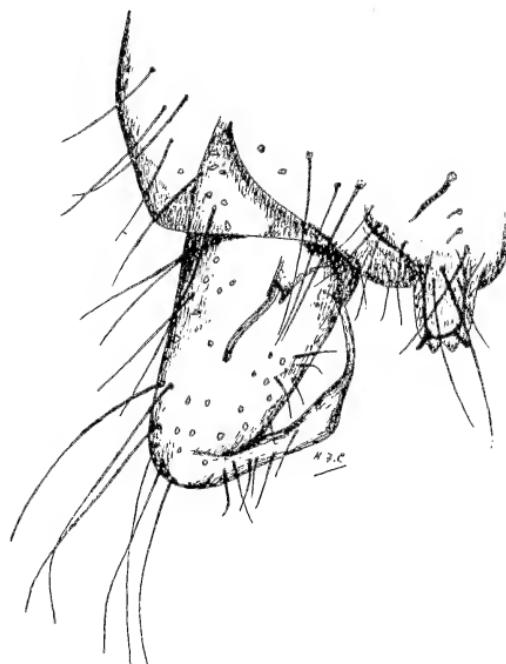


Fig. 200.  
*Chrysoconops nigrithorax*. n. sp. ♂ genitalia.

*Length*.—6 to 6·5 mm.

*Habitat*.—Bailundu, Angola, West Africa (Dr. Creighton Wellman).

*Time of capture*.—26. i. and 6. v. 1905.

*Observations*.—Described from 4 ♀'s and 2 ♂'s. A very marked and beautiful *Chrysoconops* with general black and golden coloration, the thorax and legs strongly contrasting with the abdomen.

*Types* in the British Museum.

*CHRYSOCONOPS FULVUS.* Wiedemann (1828).

*Culex fulvus.* Wiedemann (1828).

*Taeniorhynchus fulvus.* Wiedemann — Theobald (1901).

*Culex flavicosta.* Walker (1856).

Aussereurop. Zweiflüg. Ins. 546 (1828), Wiedemann; Ins. Saund., 431 (1856), Walker; Mono. Culicid. II., 208 (1901); III.. 257 (1903), Theobald.

Para, Brazil; British Guiana.

*CHRYSOCONOPS CRISTATUS.* Theobald (1904).

*Taeniorhynchus cristatus.* Theobald (1904).

First Rep. Gord. Coll. Well. Labs. 78 (1904); Mono. Culicid. IV., 491 (1907).

Pibor, Sudan.

*Type* in the British Museum.

*CHRYSOCONOPS CONOPAS.* Frauenfeld (1867).

*Taeniorhynchus conopas.* Frauenfeld—Theobald (1901).

*Culex conopas.* Frauenfeld (1867).

Verhand. Zool. Bot. Ges. Wien, XVII., 451 (1867), Frauenfeld; Mono. Culicid. II., 202 (1901); III., 268 (1903), Theobald; Mosq. Philip. Isls. 9 (1908), Ludlow.

On board ship, China Seas; Selangor, Kuala Lumpur, Perak, Dindings, Malay States; Formosa.

*Additional locality.*—Philippine Islands (Ludlow).

*CHRYSOCONOPS PSEUDOCONOPAS.* nov. sp.

Head ochraceous, pale around the eyes; proboscis and palpi ochraceous with black apices; thorax ochraceous with two darkened areas in front and two behind; pleurae pale ochreous with two dark spots and beneath a dark line. Abdomen with mostly violet scales at the base, golden on the apical segments with apical violet bands. Legs golden ochreous with narrow violet-black apical bands. Wings with yellow and brown scales, the latter very noticeable on the sixth vein.

♀. Head ochreous-brown, with narrow-curved pale scales especially around the eyes and long thin ochreous upright forked scales; palpi ochreous, with ochreous scales, black at the apex

and at the base and black chaetae; proboscis ochreous-yellow with black scaled apex and some black scales at the base; antennae brown, ochreous-yellow at the base, the second segment with some black flat scales; clypeus ochreous.

Thorax ochreous-brown with narrow-curved pale golden scales, with two small areas of black ones in front, two larger ones behind and a line along the middle; chaetae brown, tipped with golden; scutellum ochreous-brown with narrow-curved pale golden scales and seven or eight brown border-bristles to the mid lobe; metanotum ochreous.

Abdomen with ochreous basal segment, with a few dusky median scales, second, third and fourth segments mostly deep violet, fifth with ochreous median scales, remainder mainly ochreous with dark violet apical bands. The abdomen evidently subject to much variation, as one specimen shows most of the segments with ochreous line with dark apical bands, but always more violet basally than apically; posterior border-bristles golden.

Legs yellow, the tibiae with a narrow median black band and a narrow apical one, on the hind legs apices of metatarsi and tarsals with a narrow black to violet band; ungues unequal and simple.

Wings tinged with yellow on the outer costal border; vein scales yellow and dusky brown, the yellow especially marked on

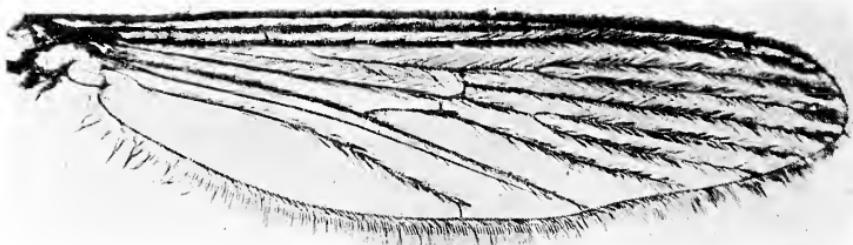


Fig. 201.

Wing of *Chrysoconops pseudoconopas*. ♀. n. sp.

the fifth and its inner branch, on the outer border of the costa and first long vein, the dark especially noticeable on the third, apices of fourth, base of outer branch of fifth and on the sixth a dark patch of broader scales at the base of the first and second veins, very like that on the base of the costa in *conopas*; the area between the fifth and the pseudo-vein between it and the sixth fringed with yellow; fork-cells *very* long, the first

**CHRYSOCONOPS ANNETTII.** Theobald (1901).

*Taeniorhynchus annetii.* Theobald (1901).

Mono. Culicid. II., 205 (1901).

Old Calabar.

*Additional localities.*—Mpuma, Uganda, 3 ♂'s and 2 ♀'s (Sir David Bruce); Marengo, Toro, Uganda (Dr. Christy); common throughout Uganda and on the Nile at Wadelai (Christy).

*Type* in the British Museum.

**CHRYSOCONOPS FUSCOPENNATUS.** Theobald (1903).

*Taeniorhynchus fuscopennatus.* Theobald (1903).

Mono. Culicid. III., 265 (1903); IV., 492 (1907), Theobald.

Entebbe, Uganda; Bukedi country, beyond Lake Kioga. General and common in Central Africa (Christy).

*Additional localities.*—Entebbe, Uganda (Capt. E. D. W. Greig, I.M.S.), 1905, 4 ♀'s and 1 ♂ (in Brit. Mus. Coll.); Mpuma, Uganda, 2 ♀'s (Sir David Bruce).

*Type* in the British Museum.

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### GENUS **MANSONIA.** Blanchard (1901).

**PANOPLITES.** Theobald (1901).

Mono. Culicid. II., 173 (1901); III., 269 (1903); IV., 494 (1907), Theobald.

Thirteen species have been described in this genus.\* They tabulate as follows:—

A. Thorax spotted.

1. Blackish-brown; thorax with 6 greenish-white spots..... *annulipes.* Walker.
2. Reddish-brown; thorax with 7 white spots..... *septempunctata.* Theobald.

AA. Thorax unspotted.

3. Thorax uniformly dark brown ..... *titillans.* Walker.
4. Thorax reddish-brown, with 2 median pale lines, small pale golden scales in middle and a round front ..... *pseudotitillans.* Theobald.

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\* Another species, *Mansonia phyllozoa*, has been described by Dyar and Knab, J. N. York Ent. Soc., XV. 199 (1907).

longer but the same width as the second, their bases nearly level; stem of the first fork-cell about one-fourth the length of the cell; stem of the second also about one-fourth the length of the cell; posterior cross-vein as long as the mid, sloping towards it, and about one and a half its own length distant from it; scales on the stem of the third and fourth very long.

*Length*.—6·5 to 7 mm.

*Habitat*.—Mpuma, Uganda (Sir David Bruce).

*Observations*.—Described from one perfect female and one damaged one.

It forms a very marked species which can at once be separated from other African *Chrysoconops* by the black spot near the base of the wing, by the very long and equal breadth fork-cells, by the very narrow dark apical leg banding and by the marked ornamentation of the thorax when viewed under the two-third power. The abdomens in the two specimens vary in colour but the general effect is a golden-yellow hue in some lights, ochreous in others, with much dark violet-black coloration basally and the same dark coloration on the apical borders of the last few segments. The type in the British Museum collection I unfortunately broke, but the remains are sufficient to enable its identity, and part of the second specimen (damaged) is mounted in balsam.

There seems to be some variation on the wings in regard to the colour of the scales, but the dark sixth vein and dark scales on some of the others and the marked yellow areas are characteristic.



Fig. 202.  
*Chrysoconops annettii*. Theobald.  
♂ genitalia. p. 446.

5. Thorax chestnut-brown in middle, paler at sides with golden-brown and silvery scales of the latter forming more or less 2 spots and occurring on each side of posterior half of thorax ..... *uniformis*. Theobald.
6. Thorax with distinct ornamentation of 2 spots and paler lines ..... *africana*. Theobald.  
Thorax silvery in middle, broad golden-brown scaled line each side, then pale creamy scales forming another broad lateral line, then more lateral golden-brown scales ..... var. *reversus*. Theobald.
7. Thorax dark brown, front  $\frac{2}{3}$  golden-brown scaled ..... *amazonensis*. Theobald.
8. Thorax deep brown with 2 parallel pale lines and golden-brown curved scales, silvery in front of scutellum *major*. Theobald.
9. Thorax very dark brown with dark brown scales forming irregular ornamentation; legs basal white bands. Very dark species; heart shaped scales on 6th vein; fork scales of head pale ..... *nigra*. Theobald. n. sp.
10. Similar to 9, but black cephalic fork scales; no heart shaped scales on the 6th vein ..... *nigerrima*. n. sp.

*M. seguini*, Laveran, is close to it, if not *uniformis*; I cannot separate it from the description. *M. arabica*, Giles, position doubtful. *M. fascipes*, Coquillett, position doubtful.

#### MANSONIA ANNULIPES. Walker (1857).

*Culex annulipes*. Walker (1857).

*Panoplytes annulipes*. Walker—Theobald (1901).

*Culex nero*. Doleschall (1864).

*Culex dives*. Schiner (1868).

Proc. Linn. Soc. Lond. I., 5 (1857), Walker; Reise der Novara, Dipt., 31 (1868), Schiner; Nat. Tijdsch. Ned. Ind. XIV., 383 (1864), Doleschall; Mono. Culicid. II., 185 (1901), Theobald; Gen. Ins. Culicid., 32 (1905), Theobald; Phil. Journ. Sci. I., 9 (1906), Banks.

Singapore; Batavia; Selangor, Dindings and Kuala Lumpur, Malay States.

Additional locality.—Mindoro, Rio Baco, P. I. (R. C. McGregor) (in Banks).

Type in the British Museum.

**MANSONIA SEPTEMPUNCTATA.** Theobald (1905).

Ann. Mus. Nat. Hung. III., 187 (1905); Mono. Culicid. IV., 494 (1907),  
Theobald.

Friedrich-Wilhelmshafen, New Guinea.

*Type* ♀ in the National Museum, Budapest.

**MANSONIA TITILLANS.** Walker (1848).

*Culex titillans.* Walker (1848).

*Panoplates titillans.* Theobald (1901).

*Taeniorhynchus taeniorhynchus.* Arribalzaga  
(1891) non *taeniorhynchus*. Wiedemann (1821).

Brit. Mus. List. Dipt., 3 (1848), Walker; Dipt. Argent., 48 (1891);  
Mono. Culicid. II., 175 (1901); III., 273 (1903), Theobald.

Rio de Janeiro; New Amsterdam, British Guiana; Cedros,  
Trinidad; Jamaica; Antigua.

*Additional locality.*—Santa Cruz (Fajado).

**MANSONIA PSEUDOTITILLANS.** Theobald (1901).

*Panoplates pseudotitillans.* Theobald (1901).

Mono. Culicid. II., 178 (1901).

Lower Amazons.

*Type* in the British Museum.

**MANSONIA UNIFORMIS.** Theobald (1901).

*Panoplates uniformis.* Theobald (1901).

*Mansonia australiensis.* Giles (1902).

Mono. Culicid. II., 180 (1901), Theobald; *ibid.* II., 187; Handbk. Gnats,  
2nd ed., 355 (1902), Giles; Canad. Ent. XXXVII., 134 (1905), Ludlow;  
Phil. Journ. Sci. I., 9, 989 (1906), Banks; Mosq. Philip., 9 (1908),  
Ludlow; Rec. Ind. Mus. II., pt. iii., No. 30, 300 (1908), Theobald.

Dacca; Ceylon; Quilon, Travancore, S. India; Perak;  
British Central Africa; Chiromo, Lower Shire, British Central  
Africa; Lagos; Old Calabar; Uganda; Zomba; McCarthy  
Island, Gambia; Kanessa and Rosaires, Sudan; Bahr-el-Ghazal;  
Princetown Bridge, Natal; Touggourt, Algeria; Ivory Coast;  
Madagascar; New Guinea; Philippine Islands; Australia.

*Additional localities.*—Port Darwin, Queensland (Dr. Ban-

croft), two ♀'s; Entebbe, Uganda (Capt. E. D. W. Greig, I.M.S.), April, 04, seven ♀'s on window; Delagoa Bay, E. Africa, two ♀'s (José F. Sant' Anna); Mpuma, Uganda, seven ♀'s (Sir David Bruce); Diyatalawa, Ceylon (T. B. F.), 2. and 5. viii. 08, 4,000 ft., four ♀'s (Bainbrigge Fletcher); Pangasinan, Bayambang, P.I. (W. P. Chamberlain); Manila, Rizal, Fort McKinley (Banks, Schultze); Sylhet, Assam (Major Hall); Manipur (C. A. Gourlay); Gopkuda Island, Lake Chilka, Canjam; Bhogaon, Purneah District, N. Bengal (C. A. Paiva); Calcutta; Katihar, Purneah District, N. Bengal; Amara, River Benue, N. Nigeria (J. McFarlane Pollard), three ♀'s; Calcutta, 2. vii. 07; Bhogaon, Purneah District, N. Bengal, 30. ix. 08 (2), ix. 08 (C. A. Paiva); Balighair, near Puri, Orissa, 23. x. 08 (3), (N. A.); Ernakulam, Cochin State, Malabar, 4. xi. 08 (8), (Annandale), very common in bungalow; Maddathoray, W. base of W. Ghats, Travancore, 19. xi. 08; Kulattupuzha, W. base of W. Ghats, Travancore, 19. xi. 08 (Annandale); Rangoon, Burma 25. ii. and xi. 08 (N. A.); Bhogaon, Purneah District, E. Bengal, 30. ix. 08 (2), 1. x. 08 (1), 6. x. 08 (5), 7. x. 08 (5), (C. Paiva); Katihar, Purneah District, 4-5. x. 08 (4), (C. Paiva).

*Time of capture*.—January to March, May to July and December at Sylhet; June and September at Manipur; August at Gopkuda Island; October at Bhogaon; November in Calcutta; October at Katihar; January at Amara.

*Notes*.—Banks describes this as the most abundant of the *Mansonia* in the Philippines, being very troublesome at times in Fort McKinley and in Manila.

*Type* in the British Museum.

*MANSONIA AFRICANA*. Theobald (1901).

*Panoplites africanus*. Theobald (1901).

*Mansonia uniformis* var. *africana*. Theobald (1903).

Mono. Culicid. II., 187 (1901); III., 273 (1903).

British Central Africa; Lagos; Old Calabar; Gambia; Sudan, White and Blue Niles; Natal; Madagascar, etc. Apparently very common in W., Central and E. Africa.

*Type* in the British Museum.

*Note*.—It seems to be distinct from *M. uniformis*, Theobald.

**MANSONIA AFRICANA.** Theobald.

var. *A. reversus.* Theobald (1901).

Mono. Culicid. II., 189 (1901).

British Central Africa ; Zomba.

*Type* in the British Museum.

**MANSONIA AMAZONENSIS.** Theobald (1901).

*Panoplytes amazonensis.* Theobald (1901).

Mono. Culicid. II., 182 (1901).

Lower Amazon ; Alempuer, Brazil.

*Type* in the British Museum.

**MANSONIA MAJOR.** Theobald (1903).

Mono. Culicid. III., 270 (1903).

Bahr-el-Ghazal ; Entebbe, Uganda.

*Type* in the British Museum.

**MANSONIA (?) NIGRA.** Theobald (1906).

Second Rept. Well. Res. Labs. Gord. Coll., 80 (1906) ;

Mono. Culicid. IV., 496 (1907), Theobald.

Blue Nile, Sudan.

*Type* in the British Museum.

**MANSONIA NIGERRIMA.** nov. sp.

Very like *M. nigra*, Theobald, but with black forked scales, no heart-shaped scales on the sixth vein and different venation.

♀. Head black with dusky and pale narrow-curved scales, almost silvery around the border of the eyes, flat white lateral scales, numerous black upright forked scales and black spines ; palpi black scaled with white apex and another white band and black chaetae ; proboscis black with a slightly yellowish band in the middle and similar coloured labellae ; antennae black with brown nodes, basal segment brown, plume hairs black.

Thorax very dark brown with small scanty curved scales, the majority golden, but some in the front white and others laterally forming indistinct spots, others over the wing roots and around the bare space in front of the scutellum ; chaetae black ; scutellum

brown with narrow-curved white scales ; metanotum brown ; pleurae paler.

Legs black ; femora with white bands, most distinct on the hind legs, six or seven in number ; tibiae with white spots, metatarsus basally white with a median white band ; first two tarsals of fore and mid legs with narrow basal white band, pure white ones to all the segments in hind legs ; unguis equal and simple.

Wings with black scales and some scattered creamy-white ones ; first fork-cell longer but very little narrower than the second fork-cell, their bases about level ; stem of the first less than one-third the length of the cell, stem of the second fork-cell also less than one-third the length of the cell ; posterior cross-vein about twice its own length distant from the mid.

*Length*.—5·5 mm.

*Habitat*.—Mpuma, Uganda (Sir David Bruce).

*Observations*.—Described from a single ♀, the abdomen lost. It is such a very marked species, however, that I have described it. Its general black appearance makes its identity an easy matter if it is examined under the two-third power, otherwise it may be confused with *Mansonia* (?) *nigra*, Theobald, from the Sudan. It differs in ; (1) the black forked cephalic scales ; (2) the venation ; and (3) absence of heart-shaped scales on the sixth long vein.

*Type* in the British Museum.

**MANSONIA SEGUINI.** Laveran (1901).

*Panoplites seguini*. Laveran (1901).

C. R. de la Soc. de Biol. LIII., 991 (1901).

Hanoi, Tonkin.

Close to, if not *M. uniformis*, Theobald.

**MANSONIA FASCIPES.** Coquillett (1906).

Proc. Ent. Soc. Wash. VII., 4, 182 (1906).

Puntarenas, Costa Rica.

*Type* in U.S. National Museum.

**MANSONIA ARABICA.** Giles (1906).

Journ. Trop. Med., p. 130, May 1 (1906).

“Wings unspotted, but brindled, clothed with large broad scales, many having the characteristic bracket form, these are

mingled white and black, the former largely preponderating; fringe scales entirely white.

Thorax dark brown grounded, clothed with white ferruginous and almost black curved scales, which very probably produce a definite ornamentation which appears to reproduce the two pale stripes of *Mansonia dorsalis* (Meig.).\*

Abdomen generally pale, clothed with a mixture of white, with a few ferruginous scales, the former forming an almost pure white median line, while the latter are mainly confined to the sides. In addition, there are on all but the last segments a pair of L-shaped dark brown spots, the horizontal limbs of which form an apical dark border to the segments, interrupted by the median white line.

Legs brindled, with black, white, and ferruginous scales, giving a generally rather dark effect, with snowy knee-spots and three fairly broad, articular, ferruginous bands on the tarsi (rather variable).

Proboscis dark at the tip and absolute base, and quite pale in the middle, but still not definitely banded.

Head mainly covered with white forked scales. Antennae of ♂ ferruginous, of ♀ with almost white plumes.

Palpi of ♂ almost white, with darker spots at the joints and in middle of long second joint; of ♀ dark brown. Scutellum with white and ferruginous scales; pleura ferruginous, with some white tufts; venter mainly white scaled, sides of abdomen densely fringed with long brown hairs. A fairly large mosquito.

The ♀ has a median, ferruginous, abdominal stripe, and the L-shaped spots so large as to be almost continuous laterally, and in both the marking is generally darker than in the ♂."

*Locality*.—Island of Barhain, N. Arabia.

#### GENUS **MANSONIOIDES**. Theobald (1907).

*Mono. Culicid. IV.*, 498 (1907).

Two species are described in this genus:—

Thorax tawny yellow, with four round snow-

white spots and traces of a fifth spot ..... *annulifera*. Theobald.

Thorax golden-brown, with seven silvery-white

spots and silvery scutellum ..... *septemguttata*. Theobald.

\* Presumably Giles means *Grabhamia dorsalis*, Meig.

**MANSONIOIDES ANNULIFERA.** Theobald (1901).

*Mansonia annulifera.* Theobald (1901).

*Panoplites annulifera.* Theobald (1901).

Mono. Culicid. II., 183 (1901), Theobald; Handbk. of Gnats, 306 (1902).

Giles; Canad. Ent. XXXVI., 299 (1904), Ludlow; Gen. Ins. Culicid. 32 (1905), Theobald; Phil. Journ. Sci. I., 9, 989 (1906), Banks; Mosq. Philip. Isl. 9 (1908), Ludlow; Rec. Ind. Mus. II., pt. iii., No. 30, 301 (1908), Theobald.

Madras; Quilon, Travancore; Behar, Bengal; Dacca; Singapore; Perak; Philippine Islands.

*Additional localities.*—Pangasinan, Bayambang, P. I. (W. P. Chamberlain); Pampanga, Camp Stotsenberg, Angeles, P. I. (E. R. Whitmore); Manila, P. I. (Banks); Calcutta; Port Canning, L. Bengal (N. Annandale); Bhogaon, Purneah District, N. Bengal, 7. x. 08 (Ind. Mus. Calc.); Manipur (C. A. Gourlay); Kalihar, Purneah District, N. Bengal (C. A. Paiva); Sylhet, Assam (Major Hall); Makavelli and Woodlands, Ceylon. 2 ♀'s, 1 ♂, 20. iv. 07, 8. v. 07, and 10. vii. 07 (E. Green).

*Time of capture.*—August and December at Calcutta; December, Port Canning; October, Katihar; May and June, Sylhet.

*Observations.*—This species I originally placed in *Mansonia*; it comes in the genus *Mansonioides*.

*Type* in the British Museum.

**MANSONIOIDES SEPTEMGUTTATA.** Theobald (1907).

Mono. Culicid. IV., 499 (1907).

Sarawak.

*Type* in the British Museum.

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**GENUS LEPIDOPLATYS.** Coquillett (1906).

Science, XXIII., 314 (1906), Coquillett; Mono. Culicid. IV. 501 (1907), Theobald.

One species only so far described in this genus:—

**LEPIDOPLATYS SQUAMIGER.** Coquillett (1904).

*Culex squamiger.* Coquillett (1904).

*Culicada squamiger.* Coquillett; Felt.

*Grabhamia de niedmanii.* Ludlow (1904).

Ento. News. XV., 80 (1904), Coquillett; Mono. Culicid. IV., 501 (1907), Theobald.

California, New Jersey.

GENUS **ETIORLEPTIOMYIA.** Theobald (1904).

O'REILLIA. Ludlow (1905).

First Rep. Gord. Coll. Well. Labs. 74 (1904); Mono. Culicid. IV., 505 (1907), Theobald.

Two species have been described in this genus, one from Africa, and the other from the Philippines.

**ETIORLEPTIOMYIA MEDIOLINEATA.** Theobald (1904).

First Rep. Well. Res. Labs. 71 (1904), Theobald; The Entomologist, 107 (1908), Theobald.

Sudan.

*Additional locality.*—Transvaal (Simpson).

*Observations.*—A single ♀ occurred in a collection sent me by the late Mr. Simpson, Government Entomologist of the Transvaal. There were slight differences from the type, the palpi were white tipped instead of being all black, the thorax more ornate, having an area of bronzy scales on each side in front and behind, and a small area on each side between them, these areas separated by the golden scales. The scutellum has some creamy flat scales with black ones, which latter only occur in the type; the pleurae have some flat white scales which could not be seen in the type, owing to its being somewhat damaged. This specimen is in the British Museum.

*Type* in the British Museum.

**ETIORLEPTIOMYIA LUZONENSIS.** Ludlow (1905).*O'Reillia luzonensis.* Ludlow (1905).

Canad. Entomo. XXXVII., 101 (1905), Ludlow; ibid. XXXVIII., 185 (1906), Ludlow; Philip. Journ. Sci. I., 9 991 (1906), Banks; Mono. Culicid. IV., 506 (1907), Theobald; Mosq. Philip. Isl. 10 (1908), Ludlow.

Bazambang, Pangasina, Luzon, Philippine Islands.

*Note.*—Banks places this in the Family *Corethridae* or in the *Corethrinae*, still retaining these insects in the Family *Culicidae*. He evidently had not seen an *Etiorleptomyia* when this was done, as the genus is undoubtedly Culicid.

GENUS **MELANOCONION.** Theobald (1903).

Mono. Culicid. III., 238 (1903); IV., 507 (1907).

Eleven species are described in this genus; they tabulate as follows:—

- A. Legs unbanded.
  - α. Thorax unadorned.
    - β. Abdomen with bands or lateral spots.
      - γ. Abdomen with basal white lateral spots.
        1. Pleurae black ..... *atratus*. Theobald.
        2. Pleurae yellow ..... *luteopleurus*. Theobald.
      - γγ. Abdomen with basal pale bands.
        3. Pleurae fawn-coloured ..... *humilis*. Theobald.
        4. Pleurae brown ..... *juxtapallidiceps*. nov. sp.
    - ββ. Abdomen unadorned.
      5. Thorax deep dusky-brown ..... *indecorabilis*. Theobald.
      6. Thorax rich umber-brown ..... *melanurus*. Coquillett.
  - αα. Thorax adorned.
    - β. Abdomen unbanded, white lateral basal spots.
      7. Thorax, anterior half golden, posterior half black ..... *spissipes*. Theobald.
      8. Thorax rich brown, two parallel pale scaled lines behind; pale golden scales at sides and front of scutellum; venter of abdomen creamy ..... *ornatus*. Theobald.
    - ββ. Abdomen unbanded and unspotted.
      9. Thorax brown, with two dark median lines in front, and a dark patch on each side behind; pleurae testaceous; venter of abdomen with traces of pale basal bands ..... *pallidiceps*. Theobald.
      10. Thorax black scaled, median area of posterior half yellow scaled; venter of abdomen with lateral violet spots each side of segments 2 to 6, middle golden-yellow ..... *urichii*. Coquillett.
  - AA. Legs banded.
    - Thorax deep rich brown, paler in the middle; legs with apical and basal pale bands ..... *annulipes*. Theobald.

MELANOCONION ATRATUS. Theobald (1901).

*Culex atratus.* Theobald (1901).

Mono. Culicid. II., 55 (1901); III., 239 (1903).

Georgetown and New Amsterdam, British Guiana; Barbados; St. Lucia; Para, Brazil; Jamaica; Trinidad.

*Additional localities.*—Fort Brown, Texas; Fort Fremont, S.C.; Fort Logan H. Roots, Ark.; Rock Island Arsenal, Ill., U.S.A. (Ludlow).

*Type* in the British Museum.

MELANOCONION LUTEOPLEURUS. Theobald (1903).

Mono. Culicid. III., 239 (1903).

Para, Brazil.

*Type* in the British Museum.

MELANOCONION HUMILIS. Theobald (1901).

Mono. Culicid. II., 336 (1901).

São Paulo, Brazil.

*Additional localities.*—Fort Fremont, S.C.; Fort Logan, Col., Texas; Key West Barracks, Fla.; Fort Thomas, Ky., U.S.A.; Camp McKinlay, Hawaii (Ludlow).

*Type* in the British Museum.

MELANOCONION JUXTAPALLIDICEPS. nov. sp.

Uniformly very dark blackish-brown; abdomen black with basal grey bands

♀. Head black, with scanty dull grey narrow-curved scales and black upright forked scales; flat lateral scales dark, but with dull violet-brown tints; antennae, palpi and proboscis black.

Thorax black, with narrow-curved dark bronzy scales and black chaetae; scutellum brown with narrow-curved dull scales and fine black posterior border chaetae; metanotum deep brown; pleurae brown.

Abdomen black, with basal narrow grey bands and dark border-bristles with dull golden reflections.

Legs black, under side of femora pale, unguis small, equal and simple.

Wings with the scales dark; first fork-cell longer and narrower than the second, its base nearer the base of the wing, its stem rather more than half the length of the cell; stem of the second posterior about as long as the cell; posterior cross-vein more than thrice its own length distant from the mid.

*Length*.—2·5 mm.

*Habitat*.—Trincomalee, Ceylon (Green).

*Time of capture*.—x. 07.

*Observations*.—Described from a single perfect ♀. A general dark-coloured species with pale abdominal bands coming near *M. pallidipes*, Theobald.

*Type* in the British Museum.

#### MELANOCONION INDECORABILIS. Theobald (1903).

Mono. Culicid. III., 241 (1903).

Para, Brazil.

*Additional locality*.—Fort Screven, Ga, U.S.A. (Ludlow).

*Type* in the British Museum.

#### MELANOCONION MELANURUS. Coquillett (1902).

*Culex melanurus*. Coquillett (1902).

Journ. N. Y. Ent. Soc. X., 193 (1902), Coquillett; Mono. Culicid. IV., 510 (1907), Theobald.

New Hampshire, New Jersey.

*Additional localities*.—New Hampshire (Dyar); Fort Munroe, Va.; N. York Harbour, N.Y., Washington Barracks, D.C.; Fort Strong, Mass.; Fort Williams, Me. (Ludlow).

#### MELANOCONION SPISSIPES. Theobald (1903).

Mono. Culicid. III., 242 (1903).

Trinidad.

*Type* in the British Museum.

#### MELANOCONION ORNATUS. Theobald (1905).

Ann. Mus. Nat. Hung. III., 100 (1905); Mono. Culicid. IV., 508 (1907), Theobald.

Friedrich-Wilhelmshafen, New Guinea.

*Type* in the National Museum, Budapest.

## MELANOCONION PALLIDICEPS. Theobald (1905).

Ann. Mus. Nat. Hung. III., 101 (1905); Mono. Culicid. IV., 509 (1907),  
Theobald.

Friedrich-Wilhelmshafen, New Guinea.

*Type* in the National Museum, Budapest

## MELANOCONION (?) URICII. Coquillett (1906).

Canad. Entomo. XXXVIII., 61 (1906).

" Proboscis and palpi black scaled; occiput yellow scaled. Thorax thinly black scaled, median part of posterior half chiefly yellow scaled, the bristles on this part and the scutellum yellow. Abdomen black scaled; venter with a row of large violet spots on either side of segments two to six; the middle of the venter golden-yellow scaled except on the narrow hind margins of the last four segments. Legs black scaled with a purplish tinge, the under side of the femora, at least basally, yellow scaled, a large patch of violet scales before the apex of the front side of each femur; fourth joint of hind tarsal white scaled (fifth missing); tarsal claws simple. Wings hyaline, somewhat smoky along the costa, scales black with a purplish tinge, those in anterior half of wing rather broad, oblanciolate.

*Length.*—About 4 mm.

*Habitat.*—Trinidad (F. W. Urich)."

*Note.*—This reads more like a *Janthinosoma* than a *Melanoconion*, and I doubt it coming in this series.

## MELANOCONION ANNULIPES. Theobald (1907).

Mono. Culicid. IV., 512 (1907).

Red Hills, Jamaica.

*Type* in the British Museum.

## GENUS NEOMELANOCONION. Theobald (1907).

Mono. Culicid. IV., 514 (1907).

Three species are now described in this genus, as follows:—

A. Thorax unadorned.

- 1. Abdomen of ♀ with apical lateral white spots, of ♂ unadorned ..... *rima*. Theobald.

2. Abdomen of ♂ with two well defined submedian black spots at base of 3rd segment, traces on 2nd, 4th; 5th and 6th with a basal band of pale yellow..... *palpale*. Newstead.

AA. Thorax adorned.

3. Thorax rich brown with a pale line running around the edge from the wings forwards and in front; abdomen black segments 2 to 4 with basal white bands, rest with basal lateral white spots ..... *chaetoventralis*. n. sp.

**NEOMELANOCONION RIMA.** Theobald (1907).

*Culex rima*. Theobald (1907).

Mono. Culicid. II., 327 (1901); ibid. III., 240 (1903); ibid. IV., 514 (1907), Theobald; Colonial Off. Rep.

Old Calabar; Lagos.

*Additional locality*.—Obuasi, Ashanti (Graham); caught in bush.

*Time of capture*.—1. x. 07 (Obuasi).

*Type* in the British Museum.

**NEOMELANOCONION PALPALE.** Newstead (1907).

Anns. Trop. Med. and Parasit. I., No. 1, 31 (1907).

Uniformly brown. Antennae densely plumose; hairs smoky-brown with the apical portions grey; segments clothed with minute white scales; nodes black.

“ ♂. Palpi long, dark brown, with a few scattered blackish-brown scales; apex faintly clavate and densely clothed with long brown hairs, more especially so at the sides, where they form a long continuous fringe. Proboscis straight, pale brown, clothed with dark brown scales; apex extending to base of apical segment of antennae. Central area of head clothed with narrow-curved pale golden-yellow scales; intermixed at the sides with long flat dusky-brown scales; sides with flat dark brown scales intermixed with a few yellow and dull cream-coloured ones; nape with a few small upright forked black scales. Mesothorax (partly denuded) and scutellum with narrow-curved pale golden-yellow scales; metanotum nude; prothoracic lobes denuded; pleurae with small dull cream-coloured scales. Halteres pale ochreous basally, knobs pale brown with a few small flat brownish scales.

Abdomen when denuded almost black; scales pale brown, with faint dull greenish-blue and dull coppery reflections; two

well-defined sub-median triangular black spots at the base of the third segment, and there are traces of similar markings on the second and fourth; fifth and sixth with a basal band of pale

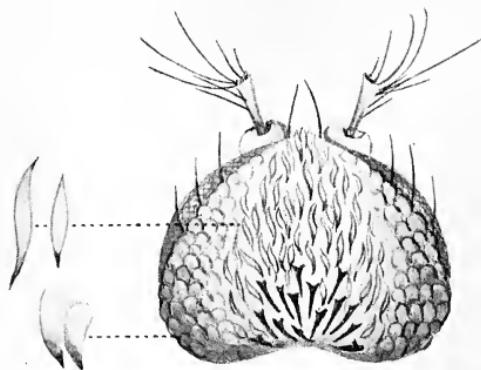


Fig. 203.  
*Neomelanoconion palpale*. ♂. Newstead (after Newstead).

yellow; venter, at the base, with pale golden-yellow scales in the centre, dull creamy ones intermixed at the sides; the remaining segments are rendered invisible by the curved condi-



Fig. 204.  
Male palp of *Neomelanoconion palpale*. Newstead (after Newstead).

tion of the abdomen. Wing scales uniformly brown, darker on the costa; posterior cross-vein about one and a half times its length distant from the mid cross-vein; first sub-marginal cell

scarcely longer than the second posterior, the latter with the veins widely divergent, outstanding scales, long, narrow, sides parallel, apex convex; fringe scales long, lanceolate. Legs uniformly brown; posterior tibiae with a pale apical band; tarsi dark brown.

*Length*.—About 2·50 to 3 mm.

*Habitat*.—On an island below Basoko, Congo Free State. 1 ♂.

*Time of capture*.—9. iii. 04."

*Type* in the Collection School Tropical Med., Liverpool University.

#### NEOMELANOCONION CHAETOVENTRALIS. nov. sp.

Head brown; proboscis and palpi dark brown; thorax rich dark brown with a pale line running around the edge from the wings forwards and in front. Abdomen black, the second to fourth segments with basal banding narrowing in the middle, other segments with basal lateral white spots, abdomen curved downwards and blunt at apex. Legs black, unbanded.

♀. Head brown, clothed with scanty pale rather long narrow-curved scales, which are paler and denser around the eyes, flat lateral scales small and grey; upright forked scales long and thin, black; two golden chaetae between the eyes and long black lateral ones; palpi small and black; proboscis black; antennae black, basal segment black with small black curved hairs.

Thorax rich brown, clothed with small dull golden-brown narrow-curved scales, which are paler at the sides and in front, forming a more or less uniform pale border; scutellum brown with similar scales to the mesonotum; posterior border-bristles black, four to the mid lobe, five to the lateral lobes; metanotum deep brown; pleurae brown with some patches of flat creamy scales.

Abdomen black, basal segment black with long golden-brown hairs, second segment with a broad basal creamy band, third and fourth with bands nearly complete, rest of the segment with large basal lateral creamy patches; border-bristles pale; venter mostly pale scaled, last three segments ventrally with black hairs, also the apex.

Legs black, unbanded, with black thorn-like spines; unguis small, equal and simple.

Wings with short fork-cells; the first longer and narrower than the second, its base a little nearer the base of the wing, its stem nearly two-thirds the length of the cell; stem of the second

fork-cell longer than the cell ; posterior cross-vein a little longer than the mid, rather more than its own length distant from it ; scales on the apex of the wing dense.

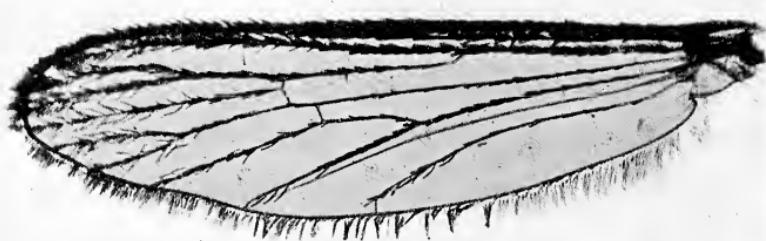


Fig. 205.

Wing of *Neomelanoconion chaetoventralis*. ♀. n. sp.

*Length*.—3 mm.

*Habitat*.—Kumanda, Queensland (Dr. Bancroft).

*Observations*.—Described from a single ♀. The abdomen is curved downwards, but I am not certain if this is natural. It gives the specimen a very characteristic appearance. The last three segments are hairy ventrally, and the apex is hairy. The wing scales clearly place it in the genus *Neomelanoconion*.

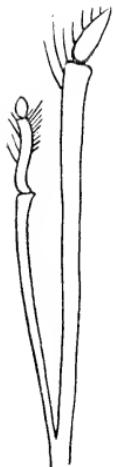


Fig. 206.

Male palp  
and  
proboscis of  
*Protomelano-*  
*conion*.

#### GENUS PROTOMELANOCONION. nov. gen.

Head and thorax clothed with narrow-curved scales, the former with dense upright forked scales ; palpi of ♀ very short, of ♂ more than three-fourths the length of the proboscis ; antennae verticillate in ♀ ; densely plumose in ♂. Lateral vein scales long and thin, much as in *Neomelanoconion*.

The male palpi are composed of three segments, the apical one small and pineapple-shaped, the penultimate nearly six times its length, curved and with a row of short spines on one side at the apex.

This genus differs only in that the males have shorter palpi than the proboscis.

## PROTOMELANOCONION FUSCA. nov. sp.

Head and thorax fuscous brown, pleurae ochreous; head pale around the eyes; abdomen black with small basal lateral pale spots; pale ventrally at the apex. Legs black, pale on the venter of femora at base. Palpi and proboscis deep brown.

♀. Head black, clothed with fuscous narrow-curved scales, grey around the edges of the eyes; numerous black upright forked scales and long black forwardly projecting chaetae; clypeus brown; palpi very short, black scaled, with a few black chaetae; proboscis black; antennae deep blackish-brown.

Thorax black with dusky bronze narrow-curved scales and jet black chaetae; scutellum brown with fuscous narrow-curved scales and four black border-bristles to the mid lobe; metanotum black; pleurae ochreous with some paler flat scales.

Abdomen shiny black, clothed with fuscous black scales, small basal creamy-white lateral spots and dusky and grey border-bristles; venter white scaled, the scales outstanding on the apical segments.

Legs uniformly black with dull ochreous reflections, under side of femora pale, apex of hind tibiae yellow beneath; chaetae black, unguis equal and simple.

Wings with the first fork-cell longer and narrower than the



Fig. 207.  
Wing of *Protomelanoconion fusca*. n. sp.

second, its base nearer the base of the wing, its stem about one-third the length of the cell; stem of the second fork-cell nearly two-thirds the length of the cell; posterior cross-vein about twice its own length distant from the mid. Halteres with ochreous stem and fuscous knob.

*Length*.—2·5 to 3 mm.

♂. Head, thorax, and abdomen as in the ♀. Proboscis black, palpi black about three-fourths the length of the proboscis,

slightly bent in near the tip, with apical spines and a small lateral tuft on one side near the apex; antennae densely plumose, plume hairs deep brown. Ungues all simple, the fore and mid unequal.

*Length.*—2·5 mm.

*Habitat.*—Obuasi, Accra, Ashanti (Dr. Graham).

*Time of capture.*—14. 17. 20. and 21. vi. 08.

*Observations.*—Described from two ♀'s and two ♂'s taken in latrines at both localities. It is a small obscure species, and can only be told by careful examination in the ♀. The male palpi are very marked.

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#### GENUS **LACIOCONOPS**. Theobald (1903).

Mono. Culicid. III., 235 (1903).

A single species only so far described.

#### **LASIOCONOPS POICILIPES**. Theobald (1903).

Mono. Culicid. III., 236 (1903).

Bonny, Gambia and West Africa.

*Type* in the British Museum.

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#### GENUS **FINLAYA**. Theobald (1903).

Mono. Culicid. III., 281 (1903); IV., 520 (1907), Theobald.

Seven species have been described in this genus, but one (*nigra*, Ludlow) has to be excluded.

#### **FINLAYA POICILIA**. Theobald (1903).

Mono. Culicid. III., 283 (1903), Theobald; Journ. Trop. Med. VII., 366 (1904), Giles; Gen. Ins. Culicid., 33 (1905), Theobald; Philip. Journ. Sci. I., 9, 990 (1906), Banks; Mosq. Philip., 9 (1908), Ludlow.

Penang; N. Guinea; N. Queensland.

*Additional localities.*—Pampanga, Camp Stotsenberg, Angeles, P. I. (E. R. Whitmore); Negros Occidental, Bago, P. I. and Mailum at Hacienda "Louisiana" (Banks).

*Note*.—Giles in recording this species refers to it as *F. poialia*, Theob. (J. T. M. vii. 366, 1904).  
*Type* in the British Museum.

**FINLAYA KOCHI.** Dönitz (1901).

*Culex kochi.* Dönitz (1901).

Insecten Borse, 5, 38 (1901), Dönitz; Mono. Culicid. II., 317 (1901); III., 284 (1903), Theobald.

New Guinea.

**FINLAYA ARANETANA.** Banks (1906).

Philip. Journ. Science I., 9, 1001 (1906).

General colours black, yellow and grey-white, the ♂ having more yellow than the ♀, the latter having much black. Legs strikingly banded in black and yellow and some white. A decided pattern on the dorsum of the abdomen of the ♂; that on the ♀ less distinct. Wings in both sexes strongly spotted in black, yellow and white, giving the appearance of a specimen of *Anophelinae*.

*Length*.—♂ 4·5 mm.; ♀ 4·75 mm.

*Habitat*.—Negros Occidental, P. I., Bago at Mailum on Hacienda "Louisiana."

*Time of capture*.—17–24 June, 1906.

*Lanaan*

*Notes*.—Captured between buttresses of large banana trees (*Anisoptera thurifera* Blume). It is apparently purely sylvan; specimens also bred by Banks from water in the axils of banana leaves. The specimens taken were found resting on the bark of large forest trees, the colour of which they appear to simulate to a certain extent. All attempts to cause them to bite were futile. They are not active and apparently uncommon. It comes very near my *Finlaya poicilia*, but the colouring at once separates it. *Type* in Entomological Collection, Bureau of Science, Manila. No. 6066.

**FINLAYA FLAVIPENNIS.** Giles (1904).

Journ. of Trop. Med. VII., 366, Dec. 1 (1904), Giles; Philip. Journ. Sci. I., 9, 990 (1906), Banks.

"Wings spotted; generally yellow, especially along the costa, which is mainly pale, except a broad but subdivided spot opposite the forking of V, and numerous other dark interruptions; fringe

broadly white spotted. All the last tarsal-joints white, and there are some apical pale bands on the other joints; first tarsals ferruginous, minutely spotted rather than banded with black. Thorax black-grounded, clothed with straw-coloured curved scales, probably disposed to form a linear adornment. Proboscis black at the base, elsewhere ferruginous, but for a very narrow black band near the tip.

♀. Head with median and lateral patches of yellow curved and forked scales, separated by darker areas in which dark forked scales preponderate. Antennae prominently pale-banded. Palpi with long pale, but slightly-brindled, tips. Pleurae and coxae with three pale bars. Femora and tibiae elaborately banded black and yellow, the pale parts preponderating on the former and the dark on the latter. Venter pale ferruginous, with prominent black apical erect tufts.

♂. In the male the abdominal terga are pale yellow, with L-shaped lateral lines, and the palpi are brindled black and ferruginous, with some indistinct banding near the base.

A rather small species.

*Habitat.*—The Philippine Islands. ‘Bred out from water held in banana stumps.’”

#### FINLAYA MELANOPTERA. Giles (1904).

Journ. of Trop. Med., 367, Dec. 1 (1904), Giles; Philip. Journ. Sci. I., 9, 990 (1906), Banks.

“Wings quite unspotted; its veins clothed with uniformly sooty scales, some of those about the middle being of the *Mansonia* form, while those on the outer parts are longer and lanceolate; apical fringe exceptionally long and dense. Tarsi sooty, with ill-contrasted bands on the upper articulations. Abdomen much compressed; sooty, unbanded, but with a very dense fringe of long lighter hairs on the hinder border of each segment. Venter clothed with dusky brown scales on the hinder part of the segments, with a band of dirty white scales, broader externally, across the bases of all but first and last segments. Springing from the junction of the dark and light portions are fan-shaped tufts of very long sooty scales, which project vertically from the surface so as to look almost like appendages when viewed in profile. The component scales vary in length, the longest being those in the middle of each tuft.

♀. Head black, with a small tuft of white scales behind the

roots of the antennae ; many clothed with flat scales of battle-dore-shaped outline, mingled with short falciform scales. No forked scales can at any rate be distinctly made out, but there may be some deep in the fold of the nape. Antennae black, with bare testaceous basal joints. Proboscis and palpi sooty, the latter short, but distinctly five-jointed. Pleurae black, with narrow snowy markings ; coxae mainly white. Hind femora entirely white, except a narrow dark band near its base, and another, rather broader, near the apex ; on the ventral side these bands are narrower, and those of the other femora are almost entirely white. The remaining leg-joints are dusky throughout, except for broad but ill-contrasted brownish-yellow bands on the tibio-tarsal and first tarsal articulations.

*Length*.—4 mm.

*Habitat*.—The Philippines. Caught in the woods."

**FINLAYA (?) NIGRA.** Ludlow. ♀ (1905).\*

Canad. Entomo. XXXVII., 387 (1905).

" ♀. Head black, densely covered with ochraceous, almost white scales, broad spindle-shaped and forked scales on the occiput, extending up to the vertex, spindle-shaped scales around the eyes, flat scales on the sides, a few light bristles extending forward between the eyes, and dark ones around the eyes ; antennae very dark brown, almost black, apparently fourteen-jointed, verticels brown, pubescence white, a few scales on the first joint, basal joint testaceous, with fine light erect hairs, and a few small flat scales ; proboscis very dark brown, with violaceous reflections ; palpi very dark brown, not unusually heavily scaled, a few hairs at the tip ; clypeus dark brown, eyes dark brown.

Thorax black ; prothoracic lobes clothed with flat white scales ; mesothorax with dark brown curved scales, except the sides and 'shoulders,' the former heavily covered with broad spindle-shaped white scales, the latter with white broad-ended flat scales, a line of broad curved white scales around the 'bare space,' some light bristles projecting forward at the nape, a short line of them near the 'bare space,' and a heavy bunch over the wing joint ; scutellum partly denuded, but the basal row of scales is curved, the remainder flat. The scales on the mid lobe white,

\* This is not a *Finlaya*, and is apparently only *triseriatus*, Say.

those on the lateral lobes a very dark brown, long light bristles, probably six, on the mid lobe ; pleura very dark, with a few large patches of white flat scales ; metanotum dark brown,

Abdomen dark, heavily scaled with dark brown flat scales (with violaceous reflections), and small white, basal, lateral spots, apical hairs light ; venter mostly white scaled, but dark apical bands on some of the distal segments. There is some suggestion of tufts on the ventral side, but not well marked, and may be due to the position in which the specimen dried.

Legs, coxae and trochanters light and sparsely light scaled ; ventrally the femora are all light scaled, and in the hind legs are dorsally light scaled, about one-half (basal) their length, and are rather heavily bristled. The remainder of the legs is brown, with the exception of a rather brilliant knee spot on the hind legs, a smaller one on the mid legs, and in some lights a light line the length of the fore tibiae on the caudal side ; unguis rather large and heavy, equal and uniserrate.

Wings clear, brown veined, rather heavily scaled with dark, broad truncated brown scales, suggesting typical *Taeniorhynchus* scales, and having violaceous reflections. Fork cells very long ; first sub-marginal about a fifth longer and somewhat narrower than the second posterior cell, stem not half the length of the cell, and the same length as that of the second posterior ; the supernumerary cross-vein a little interior of the mid, and about the same length, the posterior nearly twice as long as the mid cross-vein, and more than double its own length interior ; halteres light. The third vein extension is more marked than often found, but not so decided as in *Desvoidea fusca*, Theob.

*Length.*—5·5 mm.

Taken Aug. 3, 1905.

*Habitat.*—Rock Island Arsenal, Ill.

Described from one specimen sent by Dr. G. G. Craig, Cont. Surg. U.S.A., in some very interesting collections from Rock Island Arsenal. While the characteristics do not agree fully with Theobald's definition of *Finlaya*, they correspond more closely to those of this than to those of any other existing genus, and I have therefore referred it, provisionally at least, to *Finlaya*. The species is extremely interesting, because it is, so far as I can ascertain, the first having this peculiar grouping of scales to be reported from the United States" (Ludlow).

FINLAYA (?) VENUSTIPES. Skuse (1889).

*Aedes venustipes.* Skuse (1889).

*Aedeomyia (?) venustipes.* Skuse (1889).

Proc. Linn. Soc. N. S. Wales III., 1761 (1889), Skuse; Mono. Culicid. II., 223 (1901), Theobald.

Elizabeth Bay, near Sydney, N. S. Wales.

Type in the Museum, Sydney, N. S. W.

This species seems to answer closely to this genus.

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GENUS **BANCROFTIA.** Lutz (1904).

Mosquitos do Brazil, 40-59 (1904), Lutz; Mono. Culicid. IV., 521 (1907), Theobald.

A single species only so far described.

**BANCROFTIA ALBICOSTA.** Lutz (1904).

Mosquitos do Brazil, 40 (1904), Lutz; Mono. Culicid. IV., 521 (1907), Theobald.

Cantoveira, São Paulo, Brazil.

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GENUS **PNEUMACULEX.** Dyar (nom. nud.).

Proc. Ent. Soc. Wash. VII., No. 1, 45 and 46 (1905), Dyar; Mono. Culicid. IV., 523 (1907), Theobald.

A single species only described.\*

**PNEUMACULEX SIGNIFER.** Coquillett (1896).

*Culex signifer.* Coquillett.

*Stegomyia signifer.* Coquillett.

Canad. Entomo. XXVIII., 43 (1896), Coquillett; Mono. Culicid. IV., 524 (1907), Theobald.

New Jersey; California; Mississippi State.

\* Grabham described a mosquito as *Mansonia waverleyi* (Canad. Ent. XXXIX., 25. 07), which he says is related to *signifer*, Coq., if so, of course it comes in this genus. *Vide Appendix.*

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GENUS **ORTHOPODOMYIA**. Theobald (1904).

The Entomologist, XXXVII., 236 (1904); Mono. Culicid. IV., 527 (1907).

Three species are now described in this genus:—

1. Last 3 hind tarsals all white; leg banding on all legs apical and basal; 4 large and 3 small basal white costal spots ( $\text{\female}$  and  $\text{\male}$ ) ..... *albipes*. Leicester.
2. Last 2 hind tarsals all white and apex of the 2nd; leg banding apical and basal; wing 3 large and 2 small spots basal white costal spots ( $\text{\female}$  and  $\text{\male}$ ) *maculipes*. n. sp.
3. Last hind tarsal white; fore and mid legs unbandied; hind with apical and basal bands; wings with 4 large and 3 small basal white spots on costa.  $\text{\male}$  ..... *maculata*. Theobald.

**ORTHOPODOMYIA ALBIPES**. Leicester (1904).

Entomologist, XXXVII., 237 (1904), Leicester; Mono. Culicid. IV., 527 (1907), Theobald.

Kuala Lumpur.

*Type* in the British Museum.**ORTHOPODOMYIA MACULIPES**. nov. sp.

Head ochreous brown; antennae banded black and white; proboscis black with a broad white band on the apical half, and white tip and a spot near apex; palpi about one-third length of proboscis, black with white apex and one white band. Thorax brown with dull golden scales and three brown spots after the manner of a death's head. Abdomen black, the apical segments with basal white bands, and the penultimate and ante-penultimate with two nearly median white spots, and all with basal lateral white spots. Legs black with basal and apical white banding, in the hind legs the first and second with a very broad band, third and fourth all white. Wings black scaled with white spots.

$\text{\female}$ . Head clothed with rather large narrow-curved outstanding pale ochreous scales and numerous pale dull grey upright forked scales, a small pale patch of smaller curved scales in front between the eyes and a slightly golden patch on each side; two large black inwardly projecting ocular bristles and four smaller ones between, the mid pair smallest. Antennae brown with pale pubescence and black verticellate hairs, basal segment and second

segment with outstanding creamy scales ; proboscis black with a white band on the apical half, a small white spot nearer the base, another before the labella and apex white ; palpi about one-half the length of the proboscis, with black scales and one white median band and white apex.

Thorax dark brown clothed with rather large dull golden and brown scales, the former mainly in front, with two patches of brown scales, and behind a median area, giving a somewhat death's head look, behind mostly dark scales, but a small dull golden-scaled area behind the central dark spot, and some pale golden scales on each side of the bare space before the scutellum, and a few others at the sides and forming a small indistinct spot near the base of the wings ; chaetae large and black ; scutellum dark brown with large pale curved scales ; metanotum dark brown ; pleurae deep brown with patches of flat yellow and pale creamy scales and a patch of grey narrow-curved ones.

Abdomen black, the fourth segment with basal and apical white lateral patches, fifth the same, sixth and seventh with basal white bands and two median white spots ; eighth white basally ; border-bristles dusky brown. All the segments show lateral white spots.

Legs brown, femora and tibiae speckled, the former with a pale spot near apex, the latter with one near the base, to some extent showing in the hind legs ; tarsi with apical and basal creamy white bands ; in the hind tarsi, the second nearly all white, the third and fourth all white. Ungues all equal and simple.

Wings black scaled, spotted with white as follows :—five on the costa, three large and uniform towards apex, two smaller at base, the apical three spread evenly on to the sub-costal and second vein, and the third on to the end of the third vein as well



Fig. 208.  
*Orthopodomyia maculipes*. ♀. n. sp.  
Head.

as the fourth; three spots on the second vein, and a small pale spot at base of the first fork-cell, another on its stem and passing on to the third and fourth over the cross-veins; a spot also on base of second fork-cell and one on the apex and near



Fig. 209.

the base of the outer branch of the fifth long vein; first fork-cell very little longer and narrower than the second, its base a little nearer the apex of the wing, its stem not quite as long as the cell; stem of the second fork-cell nearly as long as the cell; posterior cross-vein about four times its own length distant from the mid.

*Length*.—5 mm.

♂. Palpi about two-thirds the length of the proboscis, dark brown to black, apex white and two other white bands;

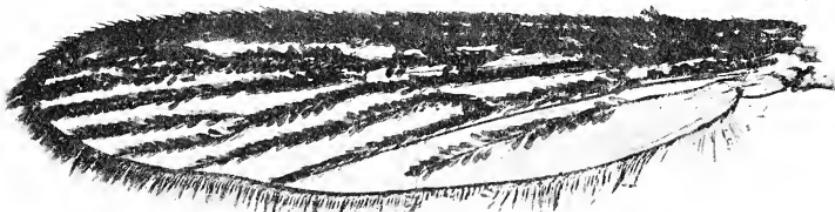


Fig. 210.  
Wing of *Orthopodomyia maculipes*. ♀. Theobald.

proboscis straight, black, with a narrow medium white band; antennae banded black and white with beautiful flaxen plume hairs.

Thorax as in ♀.

Abdomen more ornate, with basal white bands to all the segments and with three pairs of median white spots.

Wings and legs similar to the ♀.

*Length*.—5 mm.

*Habitat*.—Andaman Islands (Lowis and Ray White), four ♀'s; Peradeniya, Ceylon, three ♀'s (E. E. Green) (2,423); Maddathoray, W. base of W. Ghats, Travancore (Annandale), one ♂, Ind. Mus. Coll.

*Time of capture*.—22. vii. 08, Andaman Islands; 5. vii. 09 in Ceylon; 17. xi. 09 in Travancore.

*Observations*.—A very marked and beautiful species.

*Type* ♀ in British Museum; *type* ♂ in Indian Museum, Calcutta.

ORTHOPODOMYIA MACULATA. Theobald (1910).

Rec. Ind. Mus. IV., 29 (1910).

Thorax rich brown, ornamented with golden and creamy scales; head with pale creamy scales; proboscis with one small median white band; palpi of male about three-fourths the length of the proboscis, white at base and apex and with two median white bands. Abdomen black with basal white bands and two median white spots to some segments. Wings with dark scales and white spots. Fore and mid legs unbanded, hind with prominent white bands and last segment all white.

♂. Head brown, with narrow-curved and upright forked scales of a pale creamy to almost white hue, the fork scales numerous and uniformly scattered over the head; antennae with pale creamy and brown bands, plume hairs brown to flaxen, basal segment black with small broad creamy scales dotted over it; the first few segments of the flagellum with long white and creamy scales; palpi black, white scaled at the apex, a few white scales at the base and two median white bands, one near the apex; golden chaetae at the apex; about three-fourths the length of the proboscis, the latter black with one median narrow white band.

Thorax black, clothed with large narrow-curved creamy scales, the majority golden, but some white ones in front; at the sides and over the roots of the wings and before the scutellum are some areas of dark bronzy ones; chaetae long, golden and brown; scutellum black with long silvery-white scales and long golden border-bristles; metanotum black; pleurae brown with patches of flat white scales and some long thin ones beneath the wings; prothoracic lobes with flat white scales.

Abdomen jet black with snowy-white basal bands, and on some of the segments two small white median spots; venter black with basal white bands and all the bristles golden.

Legs black, femora and tibiae speckled with pale creamy scales; fore legs unbanded, but the apex of the tibiae white; mid legs with two pale bands involving the joints of the metatarsal and first tarsal and first and second tarsals; hind legs with a narrow band involving the metatarsal and first tarsal joint, a very broad one involving the first and second tarsal joint, a narrow one the second and third, apex of third white and all the fourth white.

Wings with black scales over most of the veins, but with white spots as follows: four large ones on the costa and three small basal ones, the first two spread on to the first and second veins, the third on to the first, second, third and fourth, the fourth on to the first and second, the basal ones small and irregular; there is also a spot on the first between the third and fourth costal spots, one on the base of the second fork-cell and at the tips of the branches, one at the apex, and another near the base of the outer branch of the fifth and one at its base, and a small one just past the cross-vein on the fourth. Halteres all pale. Fork-cells rather short, the first narrower and about the same length as the second, its stem about half as long again as the cell; stem of the second as long as the cell; cross-veins pale, the posterior about twice its own length distant from the mid.

*Length*.—5 mm.

*Habitat*.—Maddathoray, W. base of W. Ghats, Travancore.

*Time of capture*.—17. xi. 08 (Annandale).

*Observations*.—Described from a single ♂ taken resting on tree trunk in jungle. A very marked and beautiful species near *O. albipes*, Theobald, but easily told by having only the last hind tarsal white.

*Type* in the Indian Museum, Calcutta.

#### GENUS NEWSTEADINA. Theobald (1909).

Ann. Trop. Med. and Parasit. II., No. 4, 297 (1909), Theobald.

Near *Orthopodomyia*, Theobald, but differs in the longer male palpi, and the presence of very long scales on the male antennae, and also in the wings having *Mansonia*-like scales.

Head clothed with dense, narrow-curved scales, somewhat broadened, numerous upright forked scales broadly expanded apically and with flat lateral scales.

Antennae plumose in the ♂, the basal segments with very long, narrow, twisted, or wavy scales; pilose in the ♀, with narrow outstanding flat scales on the two basal segments. Palpi of the ♂ of four segments (?), as long as the proboscis, apical segment very small; of the ♀ longer than half the proboscis.

Thorax with rather long, narrow-curved scales; scutellum with rather broad, curved scales; metanotum nude.

Wings clothed along the veins with large, asymmetrical, flat scales (*Mansonia* type), and thin, straight, lateral ones beneath them. Scaled black and white, giving the wings a markedly ornamental appearance.

NEWSTEADINA ARBORICOLLIS. D'Em. de Charmoy (1908).

*Culex arboricollis.* D'Em. de Charmoy (1908).

Anns. Trop. Med. and Parasit. II., No. 3, 257, July 1 (1908),  
D'Em. d. Charmoy; *ibid.* No. 4, 297 (1909), Theobald.

"♂. Head: eyes greenish; occiput yellowish, with long white and yellow curved scales, and a few hair-like black scales; the yellow scales are placed closer in the line separating the eyes. The antennae bear long hairs which are pale yellowish apically and greyish-black basally; the segments of the basal half furnished with very long, narrow-curved scales; apical segment with a few short hairs; the basal segment with short, flat, white scales. Palpi of four segments, as long as the proboscis, with narrow white bands at the base and apex of the second, third and fourth segments; white scales are disseminated over all the segments. Proboscis black, with the apex paler and a yellowish band in the middle.

Thorax black, covered sparsely with long narrow-curved, white and golden scales, and long black hair-like scales; those portions of the thorax which are not covered with scales form velvet black spots. Scutellum bordered with flat whitish scales, and dark hair-like scales; metanotum nude, black.

Abdomen velvety black, with whitish basal bands; apical segment with a few whitish scales at apex; all segments with long yellowish marginal hairs.

Legs black, with more or less loosely scattered yellowish scales; the articulations of the femora and tibiae are basally and

apically banded ; the tarsi are black without any coloured scales ; metatarsi of front legs are basally banded ; other tarsal segments black ; in the mid legs the metatarsi and the first tarsal segments are basally banded ; in the hind legs the metatarsi are basally banded with yellowish scales and apically with white scales ; all the remaining segments are basally and apically banded with white scales.

Wings spotted. The black spots on the costa extend to the auxiliary veins. They are seven in number, and are situated as follows :—two small basal ones, the second a little larger than the first, the third having a white dot in its middle, the fourth and fifth united on the auxiliary vein by black scales, the sixth placed obliquely, the seventh near the apex ; the other veins are irregularly spotted with white scales, the fringe is spotted black and white on its basal half. The underside of the body presents the following markings :—the pleura densely covered with imbricated, flat, whitish scales ; the trochantae, coxae, and the base of the femora are covered with white scales ; the ventral segments of the abdomen are spotted basally with white scales and apically with a well-defined, narrow, white line.

♀. Proboscis black with a few scattered white scales and a white band just below the first anterior third. Palpi longer than the half of the proboscis, with a few scattered white scales and white bands ; the apical segment bears two moderately long hairs. The fore part of the occiput is covered with long, narrow-curved white scales, the hind portion with yellow upright forked scales ; the anterior lateral portions with black, upright forked scales.

Scutellum with a median and two lateral tufts of long black hairs and a few long, curved, flat white scales. Thorax and pléurae as in the ♂. Halteres yellowish, with small, white scales."

*Habitat.*—Vacoas, Mauritius.

*Observations.*—The larvae of this species were found by Professor Ronald Ross in the holes of trees at Vacoas. No adults were seen in houses, although larvae were near houses. It is recorded as being very scarce. D'Emmerez de Charmoy referred to it as being near *Culex mimeticus*, Noé. He figures the wing on Plate X. of the "Annals of Tropical Medicine and Parasitology," vol. ii., No. 3 (1908), and entirely misses out the third long vein and all the cross-veins, and the shape of the wing does not at all resemble the specimen in the Liverpool University Museum. It

was placed in the new genus *Newsteadina* on examination, a genus near to *Orthopodomyia*, Theob. In the above report the locality is spelt Vacoa and Vacoas.

*Type* in the School of Tropical Medicine, Liverpool University.

AEDES VENUSTIPES. Skuse (1889).

*Aedeomyia (?) venustipes*. Skuse (1889).

Proc. Linn. Soc. N. S. Wales III., 1761 (1889), Skuse; Mono. Culicid. II., 223 (1901), Theobald.

Elizabeth Bay, near Sydney, N. S. Wales.

This comes probably in *Finlaya*, or one of these allied genera. Very near *F. poecilia*, Theo., which is found in N. Queensland.

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### GENUS OCULEOMYIA. Theobald (1907).

Mono. Culicid. IV., 515 (1907).

Two species have been described in this marked genus, one from Sarawak and the other from the Philippines.

The two species may be distinguished as follows :—

1. Legs with basal and apical pale bands, last segment hind legs pale yellow.  
Abdomen basal golden-yellow bands, yellow basal lateral spots and apical lateral more dorsal spots of yellow, largest towards end of abdomen and on last 2 segments unite to form broad yellow apical bands..... *sarawaki*. Theobald.
2. Legs unbandied, brown.  
Abdomen brown with white lateral spots on some segments..... *fulleri*. Ludlow.

### OCULEOMYIA SARAWAKI. Theobald (1907).

Mono. Culicid. IV., 515 (1907).

Sarawak.

*Type* in the British Museum.

*Oculiomyia fulleri.* Ludlow (1909).

Canad. Entomo. XLI., 97 (1909).

"♀. Head dark brown, covered with dark brown curved and forked scales, with a stripe of white flat scales lateral and brown flat scales ventral, a few brown bristles projecting forward; antennae brown, verticels and pubescence brown, the joints white, unscaled, basal joint testaceous; palpi brown, slender, about one-fourth the length of the proboscis; proboscis brown, slightly swollen toward the apex; clypeus brown; eyes large, contiguous.

Thorax: prothoracic lobes dusky brown, practically nude; mesonotum dusky-brown, covered with brown scales and a few brown bristles; pleura testaceous, nude; scutellum brown, mid-lobe lighter, with brown curved scales; metanotum testaceous.

Abdomen brown, covered with dark brown flat scales; white lateral spots on some segments, in some specimens only on one segment, and that very indistinct, while on the other specimens this spot is well and clearly marked on four segments; venter a silvery-yellow.

Legs: coxae and trochanters light; bases and ventral aspect of femora whitish, otherwise the legs are entirely brown; unguis small, simple and equal.

Wings: membrane clear, veins with dark brown, almost black scales, possibly partly denuded towards the base, but heavily scaled towards the apex, the scales much like *Taeniorhynchus* wing-scales, but much narrowed at their bases; first sub-marginal cell longer than its stem, about the same width as and longer than the posterior-cell; cross-veins practically perpendicular to the long veins; the mid cross-vein not quite so long as the posterior, and the latter distant about one and a half its own length from the mid; halteres having light stem and fuscous knob.

*Length* about 6 mm., the proboscis itself being nearly 2 mm.

*Habitat*.—Parang, Mindanao, P.I. Taken October 25, 1908.

*Note*.—From the collections made by Major Fuller, Surgeon, U.S. Army.

Among the collection received from the Philippines in the latter part of December, 1908, were several specimens belonging to Theobald's *Oculiomyia*, a peculiar and interesting genus, the small heads and large contiguous eyes suggesting some members of the family *Acroceridae*. The specimens sent are of a new species" (Ludlow).

GENUS **MOLPEMYIA.** nov. gen.

Head clothed with large narrow-curved scales and upright forked scales and flat lateral ones. Eyes very large, meeting in the middle line; palpi of ♀ about one-fourth the length of the proboscis. Mesothorax clothed with narrow-curved scales, some broader ones in front of the roots of the wings and spatulate ones around the bare space in front of the scutellum; scutellum clothed with flat scales all over; prothoracic lobes narrow but large, clothed with flat scales; metanotum nude. Wings with normal Culicine venation, but short fork-cells, the base of the first nearer the apex of the wing than the second; lateral vein scales rather long and broad.

This genus is described on a single ♀. It is very distinct, and bears superficially a strange resemblance to *Toxorhynchites* in general appearance.

Dr. Bancroft, who sent me the specimen, writes: "I am forwarding a large dark mosquito which I found resting on a grass stalk. When disturbed it flew off with a quaint hum or singing noise that reminded me of *Toxorhynchites speciosus*." It comes near *Oculomyia*, Theob., on the one hand and *Gilesia* on the other, but differs widely from both.

## MOLPEMYIA PURPUREA. nov. sp. .

Head black with pale scales; eyes very large and silvery with small black central spots; proboscis and palpi metallic violet-black; antennae black. Thorax black with three short lines of white scales on each side behind; scutellum silvery-white; pleurae black with silvery-white puncta. Abdomen dusky metallic black with purple and dull dusky greenish reflections; basal white banding and basal lateral silvery-white spots. Legs deep metallic dusky purple to dull black, the fore and mid with basal white bands to the metatarsi and first tarsals, the hind with a white basal band on the second tarsal.

♀. Head small but with very large eyes; black with large narrow-curved pale scales and black upright forked scales behind and at the sides; the median scales are more creamy coloured than those around the eyes; thick black chaetae project forwards from the occiput near the eye border and two large ones also between the eyes. Eyes very large, silvery, with dark spots in the centre. Antennae black, with black verticillate hairs and dusky but pale-tipped pubescence; basal segment black, with

dusky pale-tipped hairs ; second segment testaceous at the base with some small flat black scales. Proboscis metallic violet-black ; palpi metallic violet-black, densely scaled, with black chaetae, about one-fourth the length of the proboscis.

Thorax shiny black with narrow-curved bronzy-brown scales, two broad-scaled white spots towards the middle, a short line of flat silvery-white scales over the roots of the wings, one in front of their bases, a line of flat white scales on each side of the bare area in front of the scutellum and pale narrow-curved scales, and some flat ones in front of it ; chaetae black, dense over the roots of the wings ; prothoracic lobes long and thin, with flat white scales ; scutellum black with flat silvery-white scales ; chaetae black ; metanotum dusky black.

Abdomen shiny black with flat violet scales, dusky in some lights, with white scaled basal bands and snowy-white basal lateral spots ; the violet scales at the apices of the segments with brilliant coppery tips ; the basal segment with mostly pale creamy scales and dense pale hairs ; posterior border-bristles deep brown, some long, some very small.

Legs deep metallic dusky violet, pale at the base of the femora, fore and mid legs with basal pale bands to the metatarsi and first tarsals, and in the second pair a trace of banding on the second tarsal ; hind legs with whiter banding, and that on the second tarsal prominent ; fore and mid unguis uniserrate, hind simple, black.

Wings with short fork-cells of about equal length, but the first sub-marginal slightly longer and narrower than the second posterior, and its base nearer the apex of the wing, its stem as long as the cell ; stem of the second posterior as long as the cell ; mid cross-vein longer than the supernumerary, posterior about twice its own length distant from the mid. Lateral vein-scales long and rather broad, especially so on the basal areas of the second and fourth vein.

Halteres with pale ochreous base and pale brown stems and knobs with small pale scales.

*Length.*—6·5 mm.

*Habitat.*—Stannary Hills, North Queensland (Dr. Bancroft).

*Time of capture.*—April 4th.

*Observations.*—Described from a single perfect ♀. A very marked species coming in a new genus. Dr. Bancroft has been only able to obtain one specimen, all mosquitoes being rare in the Stannary Hills. This specimen was found resting on a grass

stalk, and flew off when disturbed with a curious singing hum similar to that produced by *Toxorhynchites speciosus*.

*Type* in the British Museum.

**GENUS RACHIONOTOMYIA.** Theobald (1904).

Journ. Bomb. Nat. Soc. XVI., 248 (1904); Mono. Culicid. IV., 518 (1907).

A single species only described.

**RACHIONOTOMYIA CEYLONENSIS.** Theobald (1904).

Journ. Bomb. Nat. Hist. Soc. XVI., 248 (1904); Mono. Culicid. IV., 518 (1907).

Peradeniya, Ceylon.

*Type* in the British Museum.

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**SUB-FAMILY HEPTAPHLEBOMYINAE.**

THEOBALD.

Mono. Culicid. IV., 531 (1907).

(A marked 7th scaled vein to wings.)

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**GENUS HEPTAPHLEBOMYIA.** Theobald (1903).

Mono. Culicid. IV., 531 (1907).

Three species have so far been described in this genus, and I have another waiting description.

The three species tabulate as below :—

A. Thorax unadorned.

a. Legs unbanded; abdomen with basal bands and lateral spots.

Thorax deep brown, with small reddish-brown narrow-curved scales; brown pleurae, with snow-white puncta ..... *simplex*. Theobald.

Thorax greyish-black, with yellow curved scales ..... *montforti*. Ventrillon.

AA. Thorax black, with white spots ..... *argenteopunctata*. Ventrillon.

**HEPTAPIILEBOMYIA SIMPLEX.** Theobald (1903).

Mono. Culicid. III., 337 (1903); IV., 531 (1907).

Bihé, Angola, Portuguese West Africa.

*Type* in the British Museum.

**HEPTAPHLEBOMYIA MONTFORTI.** Ventrillon (1905).

Archiv. de Parasitologie I., IX., No. 4, 448 (1905), Ventrillon;  
Mono. Culicid. IV., 536 (1907), Theobald.

Aukajobe, Arivonmiamo and Tananarivo, Madagascar.

*Co-type* in the British Museum.

**HEPTAPHLEBOMYIA ARGENTEOPUNCTATA.** Ventrillon (1905).

Archiv. de Parasitologie I., IX., No. 4, 446 (1905), Ventrillon;  
Mono. Culicid. IV., 534 (1907), Theobald.

Tananarivo and neighbourhood, Madagascar.

*Co-type* in the British Museum.

**METANOTOPSILAE-MICROPALPAE.**

(See p. 112.)

**SUB-FAMILY AEDINAE.** THEOBALD.**GENUS AEDES.** Meigen (1818).\*

Dipt. Beschr. I., 13 (1818), Meigen; Mono. Culicid. II., 224 (1901);  
III., 205 (1903); IV. 537 (1907), Theobald.

Four species occur at present in this genus—viz., *cinerinus*, Meigen; *fuscus*, Osten Sacken; *nigrescens*, Theobald; and *inconspicuus*, Theobald.

\* Under this genus Dyar and Knab in 1906 sank the following genera: *Ochlerotatus*, Arri., *Haemagogus*, Will., *Stegomyia*, Theob., *Grabhamia*, Theob., *Howardina*, Theob., *Verrallina*, Theob., *Culicelsa* and *Culicada*, Felt., *Ecculex* and *Protoculex*, Felt., *Gymnoptera* and *Lepidoplatys*, Coq., and *Pseudoculex*, Dyar. This seems to show that larval characters are very misleading for purposes of classification.

They tabulate as follows :—

A. Abdomen unbanded.

- Thorax deep chestnut-brown, with paler median line darker on either side, with scattered golden-brown curved scales ; abdomen black, with dull grey lateral scales..... *cinereus*. Meigen.  
 General dark brown colour ; a prominent tuft of spines at apex of tibiae ; head dark ..... *nigrescens*. Theobald.  
 General dark brown colour, but head dull ochreous brown ..... *inconspicuosus*. Theobald.

AA. Abdomen more or less banded ..... *fuscus*. Osten Sacken.

**AEDES CINEREUS.** Meigen (1818).

*Aedes rufus*. Gimmerthal (1845).

Syst. Beschr. I., 13 (1818), Meigen ; Mono. Culicid. II., 232 (1901) ; IV., 539 (1907), Theobald.

England, Austria, Hungary, Norway and Sweden, Italy.

*Additional localities*.—Kortenhoof, Holland ; 2 ♀'s, 1. viii. 03, in Amsterdam Museum, and near Dollar, Scotland (Evans), 1 ♀.

**AEDES NIGRESCENS.** Theobald (1907).

Mono. Culicid. IV., 540 (1907).

Castle Rock, India.

*Type* in the British Museum.

**AEDES INCONSPICUOSUS.** Theobald (1908).

Entomologist XLI., 109, Theobald (1908).

Head dull ochreous brown, paler than the brown thorax ; abdomen, legs, and proboscis, all dark brown.

♀. Head deep brown, with small rather loose flat scales over most of the area, some dull ochreous, others brown, and others with a dull violet tinge, the ochreous hue prevailing, behind a large patch of narrow-curved ochreous scales, thin ochreous upright forked scales behind, brown in front ; chaetae long, deep brown ; palpi rather small, proboscis and clypeus deep brown ; antennae deep brown.

Thorax deep brown, with narrow-curved pale brown scales, showing some ochreous reflections ; chaetae deep brown ; scutellum pale brown, with narrow-curved pale scales and five deep

brown border-bristles ; metanotum deep shining brown ; pleurae grey.

Abdomen deep brown, with dull violet reflections ; on the venter the segments are pale at their bases ; border-bristles pale brown.

Legs deep brown, unbanded, the tarsi showing dull ochreous hues ; unguis small, equal, much curved and simple.

Wings with long thin brown lateral vein-scales ; fork-cells long, the first submarginal cell much longer but only slightly narrower than the second posterior cell, its base considerably nearer the base of the wing than that of the latter, its stem about one-fourth the length of the cell ; stem of the second posterior nearly as long as the cell ; posterior cross-vein nearly three times its own length distant from the mid.

*Length.*—3 mm.

♂. Antennae plumose, plume-hairs brown ; internodes grey ; palpi very small, brown. Head, thorax, and abdomen as in the female, but the abdominal segments are deeply constricted at the base and the scales at the apical edges show dull ochreous reflections (not banding). Wings much as in the female, but the stem of the first submarginal cell only one-third the length of the cell, and the posterior cross-vein only about one and a half times its own length distant from the mid. Ungues of fore and mid legs unequal, uniserrate ; hind small, equal and simple.

*Length.*—3 mm.

*Habitat.*—Transvaal (Mr. Simpson).

*Observations.*—Described from a single female and male. A small, brown, inconspicuous mosquito, the only species of this genus as yet recorded from Africa.

*Types* in the British Museum.

#### *AEDES FUSCUS.* Osten Sacken (1877).

Bull. U.S. Geol. Survey, III., 191 (1877), Osten Sacken ; Mono. Culicid. II., 226 (1901) ; III., 286 (1903) ; IV., 538 (1907), Theobald.

Various localities in N. America.

The following have been described under the generic name *Aedes*, by Dyar and Knab, but they cannot be dealt with here.

#### *AEDES PODOGRAPHICUS.* Dyar and Knab (1906).

Proc. Biol. Soc. Wash. XIX., 165 (1906).

**AEDES BALTEATUS.** Dyar and Knab (1907).

Journ. N. York Ent. Soc. XV., 9 (1907).

**AEDES AUGUSTIVITTATUS.** Dyar and Knab (1907).

Ibid. 9 (1907).

**AEDES OBTURBATOR.** Dyar and Knab (1907).

Ibid. 9 (1907).

**AEDES THORNTONI.** Dyar and Knab (1907).

Journ. N. York Ent. Soc. XV., 10 (1907).

**AEDES SEPTEMSTRIATUS.** Dyar and Knab (1907).

Ibid. XV., 10 (1907).

**AEDES PLUTOCRATICUS.** Dyar and Knab (1907).

Ibid. XV., 10 (1907).

**AEDES CONDOLESCENS.** Dyar and Knab (1907).

Journ. N. York Ent. Soc. XV., 11 (1907).

**AEDES INDOLESCENS.** Dyar and Knab (1907).

Ibid. XV., 11 (1907).

**AEDES HORTATOR.** Dyar and Knab (1907).

Journ. N. York Ent. Soc. XV., 12 (1907).

**AEDES CAMPESTRIS.** Dyar and Knab (1907).

Journ. N. York Ent. Soc. XV., 213 (1907).

**AEDES RIPARIUS.** Dyar and Knab (1907).

Journ. N. York Ent. Soc. XV., 214 (1907).

#### GENERAL NOTES ON SOME *AEDES* OF DYAR'S.

1. Under *Aedes* Dyar (l.c., p. 11) places Coquillett's *Culex fletcheri* (Proc. U.S. Nat. Mus. xxv. 84 (1902)). This is extremely unlikely, as Coquillett is surely competent to tell a *Culex*.

In any case Dyar's further innovation, placing *Culex arcanus*,

Blanchard (my *Culex flavescens* described from the Hopeian collection) is a complete error. There is no connection between *flavescens*, or rather *arcanus*, and an *Aedes* whatsoever. The authors say: "We think it may be safely identified with this species (*fletcheri*)."

2. **AEDES QUADRIVITTATUS.** Coquillett.

*Culex quadrivittatus.* Coquillett.

Dyar and Knab say on examining the types that Coquillett's species is an *Aedes*. Mr. Coquillett, they say, "described it originally in comparison with *Aedes atropalpus*, Coq., with which it has no affinity, thus producing a misleading impression."

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**GENUS MICRAËDES.** Coquillett (1906).

Proc. Ent. Soc. Wash. III., 4, 185 (1906).

Near *Aedes*, but the palpi longer, about one-third the length of the proboscis. Scales as in *Aedes*.

**MICRAËDES BISULCATUS.** Coquillett (1906).

Proc. Ent. Soc. Wash. VII., 4, 185 (1906).

Guadeloupe and Santo Domingo, West Indies.

*Type* in U.S. National Museum.

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**GENUS AEDEOMYIA.** Theobald (1901).

Mono. Culicid. II., 306 (1901).

Two species have been described in this genus:—

- A. Legs ringed with white, apices of central femora with dark scale tufts ..... *squammpipenna*. Arribalzaga.
- AA. Legs unbanded, all dark; no apical scale tufts to mid legs ..... *americana*. Neveu-Lemaire.

## AEDEOMYIA SQUAMMIPENNA. Arribalzaga (1878).

*Aedes squammipenna.* Arribalzaga (1878).

El. Nat. Arg. I., 151, 8 (1878), Arribalzaga; Dipt. Arg. 62 (1891), Arribalzaga; Mono. Culicid. II., 219 (1901), and III., 307 (1903), Theobald; Handbk. Gnats, 479 (1902), Giles; Gen. Ins. Culicid., 35 (1905), Theobald; Philip. Journ. Sci. I., 9, 990 (1906), Banks; Mosq. Philip. Isl., 9 (1908), Ludlow; Rec. Ind. Mus. II., pt. iii., No. 30, 302 (1908), Theobald.

Trinidad; British Guiana; Argentine; Brazil; Madras; Ceylon; Perak, Kuala Lumpur; Malay States; Sudan.

*Additional localities.*—Manila, P. I. (Banks); Calcutta (in Ind. Mus. Coll.); Base of Dawna Hill, L. Burma, 2. iii. 08 (N. A.); at light on board ship 4 miles off Tuticorin, S. India, 25. v. 08 (C. Paiva); Galle, Ceylon, xi. 07 (E. Green); Cape Nelson, British New Guinea (Dr. R. Fleming Jones).

*Time of capture.*—November in Calcutta.

*Notes.*—Banks records this species as “found in numbers at Manila.” The specimens in the Indian Museum, Calcutta, were taken at light.

## AEDEOMYIA AMERICANA. Neveu-Lemaire (1902).

Archiv. de Parasitologie VI., 23 (1902), Neveu-Lemaire; Mono. Culicid. III., 306 (1903), Theobald.

French Guiana.

GENUS **AEDINUS.** Lutz (in Peryassu), 1908.

Os Culicideos do Brazil, 36 (1908), Peryassu.

Head with short fusiform scales and bifurcate ones; scutellum with fusiform scales. Pernas médias sem feixes de escamas salientes. Escamas das azas em parte em estandarte estreitas, algumas compridas e quasi lineares.

A single species occurs in this genus.

**AEDINUS AMAZONENSIS.** Lutz (in Peryassu), 1908.

Os Culicideos do Brazil, 253 (1908), Peryassu.

The mesonotum has a distinct central line and two lateral ones joined to each other. Legs unbanded and with espinhos espacados, bastante compridos,

Brazil.

GENUS **SKUSEA.** Theobald (1903).

Mono. Culicid. III., 291 (1903); IV., 542 (1907), Theobald.

Seven species have now been described in this genus as follows :—

- Abdomen with basal black, median white and apical brown bands; unguis (♀) simple ... *funerea*. Theobald.
- Abdomen with median white fascia only; unguis (♀) fore and mid legs uniserrate ... *mediofasciata*. Theobald.
- Abdomen black with more or less pronounced lateral grey spots (♂)..... *pseudomediofasciata*. n.sp.
- Abdomen with basal white bands ..... *culiciformis*. Theobald.
- Abdomen with small nearly basal lateral white spots. Thorax dark brown ..... *diurna*. Theobald.
- Abdominal spots basal and thorax bright reddish brown ..... *pseudodiurna*. Theobald.
- Abdomen uniformly brown; ochreous below. Thorax and legs uniform rich brown..... *uniformis*. Theobald.

**SKUSEA FUNEREA.** Theobald (1903).

Mono. Culicid. III., 292 (1903), Theobald; Ann. Queensland Museum, No. 8, 55 (1908), Bancroft.

Queensland; New Guinea.

Dr. Bancroft says "this small black mosquito is found biting in Mrs. Bell's scrub at Deception Bay; present throughout the year but always rather uncommon; it oviposits in confinement and the eggs are laid separately; they are very long, narrow oval in shape, black with a pattern."

*Type* in the British Museum.

**Var. ORNATA.** Theobald (1905).

Ann. Mus. Nat. Hung. III., 79 (1905); Mono. Culicid. IV., 542 (1907), Theobald.

New Guinea, Sattelberg, Huon Gulf and Friedrich-Wilhelms-hafen.

*Type* in the National Museum, Budapest.

**SKUSEA MEDIOFASCIATA.** Theobald (1907).

Mono. Culicid. IV., 544 (1907).

India.

*Type* in the British Museum.

## SKUSEA PSEUDOMEDIOFASCIATA. nov. sp.

Head black; thorax rich brown. Abdomen black, with more or less basal grey lateral spots. Legs deep brown, unbanded.

Allied to *S. mediofasciata*, Theob., but differs in ♂ genitalia and venation.

♂. Head clothed with flat black scales, showing dull ochreous and violet reflections and black chaetae. Antennae brown with black plume hairs arising from black areas; basal

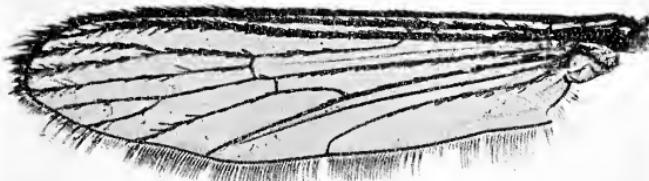


Fig. 211.

Wing of *Skusea pseudomediofasciata*. ♂. n. sp.

segments globular, dark except on one side; palpi small, black scaled; proboscis black.

Thorax rich brown with narrow-curved bronzy scales and black chaetae, showing bronzy reflections; scutellum brown with narrow-curved pale bronzy scales, and dark brown border-bristles; metanotum bright brown; pleurae brown with some pale flat scales.

Abdomen black, basal lateral grey spots, some extending to the middle and being more median than basal; brown border-bristles with pale golden reflections.

Legs deep brown, unbanded; femora pale beneath and femora and tibiae with pale spines; fore and mid unguis unequal and the larger uniserrate, smaller simple; hind equal and simple.

Wings with the first fork-cell longer and narrower than the second, their bases nearly level, stem of the first not quite as long as the cell; stem of the second longer than the cell; posterior cross-vein about as long as the mid, rather more than its own length distant from it. Halteres with pale stem and fuscous knob.

Male genitalia very marked; the claspers short and blunt with some large dark, blunt teeth; harpogones and harpes long and spine-like.

*Length*.—3·5 mm.

*Habitat*.—Peradeniya and Hakgala, Ceylon (Green).

*Time of capture*.—iii. and iv. 1907.

*Observations*.—Described from two ♂'s, one dissected. This

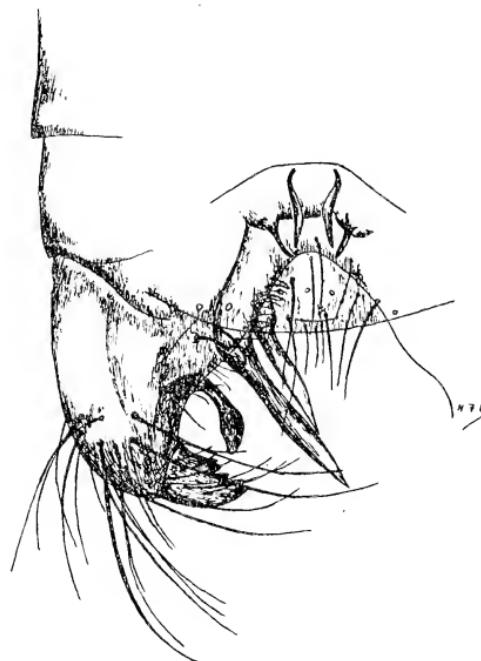


Fig. 212.

*Skusea pseudomediofasciata*, n. sp. ♂. Genitalia.

species comes very near *S. mediofasciata*, Theobald, but can at once be told from that insect by the different venation and very marked male genitalia.

*Type* in the British Museum.

#### SKUSEA CULICIFORMIS. Theobald (1905).

Ann. Mus. Nat. Hung. III., 77 (1905); Mono. Culicid. IV., 546 (1907),  
Theobald.

Panmonur River, New Guinea.

*Type* in National Museum, Budapest.

#### SKUSEA DIURNA. Theobald (1903).

The Entomologist, XXXVI., 259 (1903); Mono. Culicid. IV., 547 (1907),  
Theobald.

Jugra, Kuala Lumpur, Federated Malay States.

*Type* in the British Museum.

## SKUSEA PSEUDODIURNA. Theobald (1910).

Rec. Ind. Mus., IV. 32 (1910).

Head dusky or pale according to the light. Thorax bright reddish-brown. Abdomen with basal white lateral spots. Legs brown, unbanded.

♂. Head dark, clothed with a mixture of flat dusky and pale grey scales and numerous dark upright forked scales and many black chaetae projecting forwards; antennae with dark plume hairs, and pale grey internodes, dusky at the tip; palpi very small, dark brown; proboscis deep brown.

Thorax bright deep reddish-brown, with scanty scattered bronzy narrow-curved scales and with black chaetae, especially thick over the roots of the wings; scutellum testaceous with narrow-curved dull creamy and bronzy scales to the mid lobe, dark ones to the lateral lobes; metanotum bright chestnut-brown.

Abdomen black with basal white lateral spots, most prominent on the last few segments, with pale brown border-bristles; venter dusky.

Legs uniformly deep brown, except the coxae and under side of the femora which are pale; fore and mid unguis unequal and uniserrate, hind equal and simple.

Wings with short fork-cell, the first longer and narrower than the second, stem of the first nearly as long as the cell, stem of the second longer than the cell; posterior cross-vein its own length distant from the mid.

*Length*.—4 mm.

*Habitat*.—Sukna, 500 feet, E. Himalayas.

*Time of capture*.—1. vii. 08.

*Observations*.—Described from a single ♂. Very near *Skusea diurna*, but the bright reddish-brown thorax at once separates it.

*Type* in the Indian Museum, Calcutta.

## SKUSEA UNIFORMIS. Theobald (1910).

Rec. Ind. Mus., IV. 33 (1910).

Head black, with a pale border around the eyes. Thorax rich brown. Abdomen deep brown, unbanded, dull ochreous below. Legs uniformly deep brown, but the femora pale ochreous below.

♀. Head black, with small flat black scales, except for a pale area around the eyes and at the sides and some dark

upright forked scales ; clypeus, palpi and proboscis black ; antennae deep brown, basal segment black, base of second segment pale ochreous.

Thorax rich deep brown, with narrow-curved bronzy brown scales scattered over its surface ; scutellum shiny black with narrow-curved bronzy-black scales, the surface pale in some lights, four dark median posterior border-bristles ; metanotum chestnut and dull brown ; pleurae brown with dull flat white scales.

Abdomen deep brown with dull brown scales, dull ochreous to grey scaled venter.

Legs uniformly deep brown, except the coxae and under side of femora which are ochreous ; unguis equal and simple.

Wings with short fork-cells, the first slightly longer and narrower than the second posterior, their bases about level, the stem about two-thirds as long as the cell ; stem of the second posterior as long as the cell ; posterior cross-vein longer than the mid, about one and a half times its own length distant from it.

*Length*.—4 mm.

*Habitat*.—Palode, 20 miles N.E. of Trivandrum, Travancore.

*Time of capture*.—15. xi. 08.

*Observations*.—Described from a single ♀. The abdomen somewhat denuded, but there is no trace of any pale scales.

*Type* in the Indian Museum, Calcutta.

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#### GENUS LEPTOSOMATOMYIA. Theobald (1905).

Ann. Mus. Nat. Hung. III., 110 (1905) ; Mono. Culicid. IV., 548 (1907),  
Theobald.

#### LEPTOSOMATOMYIA LATERALIS. Theobald (1905).

Ann. Mus. Nat. Hung. III., 110 (1905) ; Mono. Culicid. IV., 548 (1907),  
Theobald.

Muina, New Guinea.

*Type* in National Museum, Budapest.

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GENUS **HAEMAGOGUS.** Williston (1896).

Trans. Ent. Soc. Lond., 271 (1896), Williston; Mono. Culicid. II., 238 (1901), Theobald.

The four known species tabulate as follows —

- A. Principal colours blue and dark violet.
  - 1. First fork-cell long, more than twice the length of the stem; post cross-vein four times its length from mid ..... *cyaneus*. Fabricius.
  - 2. First fork-cell shorter than its stem; post cross-vein its own length distant from the mid ..... *capricornii*. Lutz.
- AA. 3. Principal colours white and blue dorsally... *leucomelas*. Lutz.
- AAA. 4. Metallic blue and green on head; abdomen dark blue with silvery bands on all segments; base of first submarginal cell nearer base of wing than second ..... *regalis*. Dyar and Knab.

**HAEMAGOGUS CYANEUS.** Fabricius (1805).

*Culex cyaneus*. Fabricius (1805).

*Haemagogus splendens*. Williston (1896).

*Aedes splendens*. Giles (1900).

Syst. Antl., 35, 9 (1805), Fabricius; Mono. Culicid. II., 239 (1901); III., 308 (1903); IV., 550 (1907), Theobald.

Para, Brazil; British Guiana; Trinidad; St. Vincent.

**HAEMAGOGUS CAPRICORNII.** Lutz-Theobald (1907).

Mono. Culicid. IV., 551 (1907), Theobald.

Brazil.

**HAEMAGOGUS LEUCOMELAS.** Lutz (1904).

Mosq. do Brasil, 13 (1904), Lutz.

Brazil.

**HAEMAGOGUS REGALIS.** Dyar and Knab (1906).

Proc. Biol. Soc. Wash. XIX., 167 (1906).

“ Proboscis long, black; head and thorax brilliant metallic blue and green; pleurae silvery; abdomen dark blue with silvery bands on all the segments above, broader below. Legs blue-

black, with mid and hind femora white below towards base. Base of first sub-marginal cell slightly nearer the base of the wing than the base of the second posterior cell.

Twenty-two specimens, Sonsonate, Salvador (Knab); San Juan, Trinidad (Urich); Guatemala (Schwarz and Barber)."

*Note*.—Judging from this brief description this is a distinct and valid species, but there is nothing to define its generic position.

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#### GENUS **CACOMYIA**. Coquillett (1906).

Bull. Tech. Se. 11, U.S. Dep. Agri. Div. Ent., 16 (1906), Coquillett; Mono. Culicid. IV., 554 (1907), Theobald.

Two species come in this genus:—

1. Abdomen with white scales in the middle of the last two segments only..... *albomaculata*. Theobald.
2. Abdomen with white scales in the middle of some of the other segments..... *equina*. Theobald.

#### **CACOMYIA ALBOMACULATA**. Theobald (1903).

*Haemagogus albomaculata*. Theobald (1903).

Mono. Culicid. III., 308 (1903), Theobald.

Cara Cara, Demerara River and Pomeroon River, British Guiana.

*Type* in the British Museum.

#### **CACOMYIA EQUINA**. Theobald (1903).

*Haemagogus equina*. Theobald (1903).

Entomologist, XXXVI., 282 (1903), Theobald.

Kingston, Jamaica.

*Type* in the British Museum.

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#### GENUS **VERRALLINA**. Theobald (1903).

Mono. Culicid. III., 295 (1903).

Four species have been described in this genus:—

Legs, proboscis and abdomen unbanded.

Thorax black, with small bronzy-black curved

scales; pleurae dark, with four white patches.

Abdomen with basal lateral white spots ..... *butleri*. Theobald.

Very similar, but stem of first fork-cell small *nigricorpus*. Theobald.  
 Thorax dark brown to shiny black, with  
 bronzy-brown scales; pleurae pale. Abdo-  
 men with no spots; base of wings pale ..... *nigra*. Theobald.  
 Thorax blackish-brown, with two pale stripes  
 on front of mesonotum, and with coppery-  
 brown spindle shaped scales. Abdomen with  
 basal lateral white spots..... *pembaensis*. Theobald.

Coquillett describes two species in this genus, but I do not  
 think they belong here, namely, *insolita* and *laternaria*.

**VERRALLINA BUTLERİ.** Theobald (1901).

*Aedes butleri.* Theobald (1901).

Mono. Culicid. II., 230 (1901), and III., 295 (1903).

Dindings, Perak, Selangor, Malay States.

*Type* in the British Museum.

**VERRALLINA NIGRICORPUS.** Theobald (1901).

Mono. Culicid. II., 231 (1901).

Hacoatiara, Lower Amazon.

*Type* in the British Museum.

**VERRALLINA NIGRA.** Theobald (1901).

*Verrallina niger.* Theobald (1901).

Mono. Culicid. II., 237 (1901); III., 295 (1903).

Old Calabar.

*Type* in the British Museum

**VERRALLINA (?) PEMBAENSIS.** Theobald (1901).

*Aedes pembaensis.* Theobald (1901).

Mono. Culicid. II., 235 (1901).

Pemba Island, East Africa.

*Type* in the British Museum.

Coquillett refers to his two species in a table as follows :—

Upper side of thorax black scaled; the sides  
 in front of the wings white scaled ..... *insolita*. Coquillett.  
 Upper side of thorax wholly white scaled ... *laternaria*. Coquillett.

Neither of them seem to come in this genus.

## VERRALLINA (?) INSOLITA. Coquillett (1906).

Canad. Entomo. XXXVIII., 62 (1906).

" Proboscis and palpi black scaled; occiput white scaled around the edge, yellow scaled in the centre and with a pair of black scaled spots on the upper half. Thorax black scaled in the middle, the sides in front of the wings broadly and spots on the pleura, white scaled. Abdomen black scaled, with a tinge of purple, middle of venter, except on the broad apices of the last four segments, white scaled extending outwards considerably on these segments. Legs black scaled, the under side of the front and mid femora towards the base and the whole of the hind femora, except the base and a broad band beyond the middle, white scaled; narrow bases of first three joints of the front and mid tarsi, both ends of the first joint and base of the second joint of the hind tarsi white scaled; claws of front and mid tarsi toothed; hind equal and simple. Wings hyaline, scales brown.

*Length.*—Nearly 4 mm.

*Habitat.*—Trinidad, W. Indies. 1 ♀ Coll. F. W. Urich. Dyar and Knab give 'Tehuantepec, Salina Cruz, Almoloya, Mexico; Sonsonate, Salvador and Puntarenas, Costa Rica.'

*Observations.*—Clearly not coming in this genus. Dyar and Knab refer it to *Aedes*. The larvae were all found in trees except in one instance. At Tehuantepec they were in a cemented tank in a shaded part of the garden at a public bath-house. (F. V. T.).

## VERRALLINA (?) LATERNARIA. Coquillett (1906).

Proc. Ent. Soc. Wash. VII., 4, p. 184 (1906).

*Note.*—I have not seen this species. Dyar and Knab refer it to *Aedes*, and say the larvae were collected by Mr. Busck in a hollow tree in Trinidad.

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## SUB-FAMILY URANOTAENINAE. MITCHELL.

Nine genera seem to occur in this sub-family. They tabulate as follows :—

- A. First fork-cell very small.
  - α. Clypeus nude.
    - β. Male unguis normal.
      - Wings with broad lanceolate lateral scales; no inflated ones. *Uranotaenia*. Arribalzaga.
      - Wings with some inflated vein scales ..... *Pseudouranotaenia*. Theobald.
    - ββ. Male unguis broad and plate-like. *Anisocheleomyia*. Theobald.
      - aa. Clypeus with long dense scales ..... *Squamomyia*. Theobald.
  - AA. Fork-cells moderate size.
    - γ. Proboscis normal.
      - δ. First fork-cell normal: nearly as large as the second fork-cell..... *Mimomyia*. Theobald.
      - δδ. First fork-cell expanded basally ... *Pseudograhamia*. Theobald.
      - γγ. Proboscis swollen apically, elbowed with complex arrangement of hairs; clypeus elongate, almost covering palpi ..... *Harpagomyia*. Meijere.
      - γγγ. Proboscis and clypeus normal; lateral vein scales forked apically ..... *Hodgesia*. Theobald.
  - AAA. Fork-cells short, but first longer than second.
    - Proboscis normal, like *Uranotaenia* ; no flat thoracic scales..... *Ficalbia*. Theobald.

Without taking the curious small first fork-cell into consideration, the genera *Mimomyia*, *Harpagomyia*,\* *Pseudograhamia*, *Hodgesia*, and *Ficalbia* also seem to fall in this sub-section; but their inclusion is only because I cannot see where else to place them. Such aberrant forms as *Harpagomyia* and *Hodgesia* can be placed in no sub-family satisfactorily.

\* I had named this genus *Grahamia* in a printed Report on Dr. Graham's Collection for the Colonial Office before Meijere made his genus *Harpagomyia* in *Tijdschrift voor Entomologie*, LII., 165 (1909), but as that Report is not on sale Meijere's name takes precedence.

## GENUS URANOTAENIA. Arribalzaga (1899).

Dipt. Argent., 63 (1899), Arribalzaga; Mono. Culicid. II., 241 (1901); IV., 586 (1907), Theobald.

Twenty-nine species are now described in this genus. One species described by Giles as an *Uranotaenia* certainly does not belong to this genus, and is the same insect as he describes in another genus, *Runchomyia*, neither are correctly placed. Banks' and Carter's notes are given with this supposed *Uranotaenia*, which is placed here provisionally.

The distinguishing character of the species are shown in the following list:—

- A. Thorax ornamented with flat blue scales in lines or spots.
  - a.* Legs banded.
    - β.* Thorax with blue flat scales.
    - γ.* Prothoracic lobes always blue scaled.
      - Thorax with median line of blue not reaching scutellum ..... *pulcherrima*. Arribalzaga.
      - Thorax with a pale blue spot near the scutellum; abdomen with triangular pearly patches ..... *geometrica*. Theobald.
      - Thorax with a pale blue median line reaching the scutellum; abdomen with pearly bands ..... *sapphirina*. Osten-Sacken.
      - Thorax bright brown, blue spot before scutellum, and line of blue scales at roots of wings, and blue prothoracic lobes; abdomen with pearly white apical bands; fore and mid legs unbanded; hind all apical white spots, last segment white ..... *apicalis*. Theobald.
      - γγ.* Thorax with white prothoracic lobes, chestnut-brown mesonotum, grey pleurae ..... *annulata*. Theobald.
    - aa.* Legs unbanded.
      - Thorax with pale blue spot in front of the roots of the wings and with a dark median line; abdomen with pearly white bands ..... *nataliae*. Arribalzaga.
      - Thorax with azure blue scales in front and over roots of wings and azure blue prothoracic lobes. Abdomen unbanded; venter ochraceous ..... *pallidoventer*. Theobald.

- Thorax with shiny silvery blue spot at base of each wing; abdomen with apical pearly blue lateral spots; last two and apex of ante-penultimate segment of hind legs white ..... *lowii*. Theobald.
- Thorax with metallic mauve median line ending before scutellum and a similar patch in front of each wing root; abdomen showing pearly apical lateral patches on segments 5 and 6 ..... *socialis*. Theobald.
- Thorax with flat azure blue scales in front of roots of wings. Apical half of 3rd tarsal, whole of 4th and 5th white in some lights, dusky in others. Abdomen apical pale blue spots ..... *minuta*. Theobald.
- Thorax with pale blue prothoracic lobes and a pale blue area in front of wing roots; head blue with broad median black patch ..... *balfouri*. Theobald.
- Thorax with medially interrupted azure blue band beginning beneath root of wings on pleurae and extending around anterior margin of mesothorax, including the prothoracic lobes ..... *falcipes*. Banks.
- Thorax azure blue line on each side before base of wings and one below on pleura; prothoracic lobes azure blue; abdomen unbanded with pale lateral spots and white venter ..... *ceylonica*. n. sp.
- Thorax with silvery blue stripe in front of wings and one on pleura passing on to prothoracic lobes; abdomen black unbanded; hind legs with apical three-fifths of 3rd and all 4th and 5th joints white ..... *typhlosomata*. Dyar and Knab.

AA. Thorax ornamented with flat white scales in lines.

Legs unbanded.

- Thorax black with line of flat white scales in front of each wing root and flat white scales on prothoracic lobes ..... *pygmaea*. Theobald.

- Similar but head blue ..... *caeruleocephala*. Theobald.

- Thorax with white line running up to base of wings for about half the length of thorax and another parallel one on the pleurae which are ochraceous; abdomen with first four segments mostly creamy white ..... *alboabdominalis*. n. sp.
- Thorax blackish to bronzy, white behind head and in front of wings; abdomen with basal white lateral spots ..... *malayi*. Theobald.
- Thorax with grey scaled line over roots of wings; head with dull violet scales; abdomen black, unbandied, venter black ..... *atra*. Theobald.
- Thorax with white scaled line from middle of scutellum to half across mesonotum; white line on each side in front of wing roots; prothoracic lobes white; abdomen apical white lateral spots ..... *pallidocephala*. Theobald.
- Very similar; head blue; ♂ legs abnormal form ..... *abnormalis*. nov. sp.
- Thorax rufous; pleurae pale ochreous; patch of flat white scales in front of wing roots; abdomen with 2nd and 4th segments with broad apical white scaled bands last segment with apical median white spot ..... *alba*. Theobald.
- Legs banded.
- Abdomen with basal pale yellowish-brown scales; legs with apical and basal pale banding; very small *minima*. Theobald.\*
- Abdomen unbanded; paler below; legs with hind pair with apical and basal pale creamy bands, last 2 tarsi all white; thorax 2 pale lateral lines on sides ..... *bilineata*. n. sp.
- Abdomen black at sides with ochreous yellow dull metallic scales above leaving a narrow black line at the base of each segment becoming broader on terminal segments and a subbasal median black spot; legs with 3rd 4th and 5th joints white with metallic lustre ..... *calosomata*. Dyar and Knab.

\* This is a *Ficalbia* (vide p. 541.)

- AAA. Thorax without flat scales.
- a.* Prothoracic lobes flat blue scales. Abdomen unbanded; venter yellow.  
Legs unbanded; last two or three mid and hind tarsals pale in some lights, not in others..... *testacea*. Theobald.
  - aa.* Prothoracic lobes with flat dark brown scales. Abdomen with white bands near apex of segments; venter yellow.  
Legs unbanded ..... *powelli*. Giles.
  - aaa.* Prothoracic lobes pale ochreous with semi-transparent whitish scales. Abdomen with apical creamy-scaled bands.  
Legs with hind tibiae and first and second hind tarsals with apices white, last two hind tarsals all white ..... *apicotaeniata*. n. sp.  
Thorax clear ochreous in front, rich brown behind. Abdomen with narrow indistinct basal pale bands and ochreous venter. Legs unbanded..... *ornatus*. n. sp.

#### POSITION DOUBTFUL.

- Thorax bright ferruginous with a large round black spot just in front of each wing. Abdomen and legs unbanded ... *bimaculata*. n. sp.  
Small obscure brown species, with unbanded legs and abdomen ..... *fusca*. Theobald.

#### URANOTAENIA PULCHERRIMA. Arribalzaga (1899).

Dipt. Argent., 65 (1899), Arribalzaga; Mono. Culicid. II., 244 (1901); III., 303 (1903); IV., 557 (1907), Theobald.

Buenos Ayres, Argentine; São Paulo, Brazil; New Amsterdam, British Guiana; Antigua, West Indies.

#### URANOTAENIA GEOMETRICA. Theobald (Lutz MS.) (1901).

Mono. Culicid. II., 247 (1901) and IV., 565 (1907), Theobald.

Cubato, near Santos, Brazil; Stanley Town, New Amsterdam, British Guiana.

*Type* in the British Museum.

**URANOTAENIA SAPPHIRINA.** Osten-Sacken (1868).

*Aedes sapphirina.* Osten-Sacken (1868).

Trans. Ent. Soc. America, II., 47 (1868), Osten-Sacken; Mono. Culicid. II., 249 (1901); IV., 557 (1907), Theobald.

United States (numerous localities).

**URANOTAENIA APICALIS.** Theobald (1903).

Mono. Culicid. III., 298 (1903).

Antigua.

*Type* in the British Museum.

**URANOTAENIA ANNULATA.** Theobald (1901).

Mono. Culicid. II., 250 (1901); III., 303 (1903).

Bonny and Gambia, West Africa.

*Type* in the British Museum.

**URANOTAENIA NATALIAE.** Arribalzaga (1899).

Dipt. Argent., 64 (1899), Arribalzaga; Mono. Culicid. II., 252 (1907), Theobald.

Buenos Ayres, Argentine, and São Paulo, Brazil.

**URANOTAENIA PALLIDOVENTER.** Theobald (1903).

Mono. Culicid. III., 300 (1903).

Para, Brazil.

*Type* in the British Museum.

**URANOTAENIA LOWII.** Theobald (1901).

Mono. Culicid. II., 339 (1901); III., 301 (1903); IV., 560 (1907).

St. Lucia and St. Vincent, West Indies; Trinidad; Para, Brazil; New Amsterdam, British Guiana.

*Type* in the British Museum.

**URANOTAENIA SOCIALIS.** Theobald (1901).

Mono. Culicid. II., 340 (1901).

Jamaica.

*Type* in the British Museum.

*URANOTAENIA MINUTA.* Theobald (1907).

Mono. Culicid. IV., 559 (1907).

New Amsterdam, British Guiana.

*Type* in the British Museum.*URANOTAENIA BALFOURI.* Theobald (1905).First Rept. Gord. Coll. Well. Labs., 82 (1905) and Second Rept.,  
82 (1906), ♂; Mono. Culicid. IV., 561 (1907).Pibor; Azzar, White Nile. 4 ♀'s taken by Harold King,  
12. v. 09; 1 ♀ in British Museum; Lagos (Dr. Graham).*Type* in the British Museum.*URANOTAENIA FALCIPES.* Banks (1906).

Philip. Journ. Sci. I., 9, 1004 (1906).

Dark ochreous with brown scales; the head brown scaled medially with azure around the eyes; a medially interrupted azure band beginning beneath root of wings on pleurae, extending around anterior margin of mesothorax and including prothoracic lobes. Thorax much arched, almost globose. Posterior metatarsus and first tarsal segment brown, remaining tarsal segments pale, almost cream coloured.

*Length.*—2·5 mm.*Habitat.*—Rizal, P. I., near Camp 320, Manila waterworks (Banks, Schultze Coll.).*Time of capture.*—22. ii. 06.*Types* ♂ and ♀, No. 5210. Ent. Coll. Bur. Sci., Manila.

*Notes.*—A very small species, with all the thoracic metallic markings cephalad. The peculiarly placed metallic coerulean band, and the pale tarsal joints of the hind legs easily distinguish it from others of this genus. The unguis of both sexes are said to be falcate.

*URANOTAENIA CEYLONICA.* nov. sp.

Head brown, with a few dull pale blue scales in the middle and around the eyes. Thorax rich brown, an azure blue line on each side before the base of the wings and one below on the pleura; prothoracic lobes azure blue; scutellum with brown scales. Abdomen black, unbanded, pale lateral spots and pale venter. Legs black, unbanded, creamy at their base. Wings brown.

♀. Head dark brown, a few pale dull blue scales in the middle, and some forming a narrow border around the eyes, with black chaetae; violet at the sides in some lights. Antennae brown, basal segment bright testaceous and brown; proboscis deep brown, swollen apically; palpi brown with long dark chaetae.

Thorax deep rich brown with bronzy narrow-curved scales, a distinct line of azure blue flat scales on each side in front of the roots of the wings and long black chaetae; prothoracic lobes clothed with flat azure blue scales; scutellum with flat brown scales; posterior border-bristles black, four to the mid lobe;



Fig. 213.  
Wing scales of *Uranotaenia ceylonica*. ♀. n. sp.

metanotum dark brown; pleurae deep brown, with a large oblong patch of flat azure blue scales parallel with those of the prothoracic lobes.

Abdomen dusky black, unbanded, with short pale border-bristles; lateral apical dull white spots and white scaled venter.

Legs deep brown, unbanded, with violet reflections; bases creamy scaled.

Wings with the first fork-cell rather more than half the size of the second fork-cell, its base much nearer the apex of the wing, its stem nearly four times the length of the cell, stem of the second fork-cell slightly more than the length of the cell; posterior

cross-vein longer than the mid, about its own length distant from it; lateral vein scales at the apex of wing, large; no trace of



Fig. 214.  
Wing of *Uranotaenia ceylonica*. ♀. n. sp.

coloured line at base of wing. Halteres with pale stem and fuscous knob.

*Length*.—2 mm.

*Habitat*.—Galle, Ceylon (Bainbrigge Fletcher).

*Time of capture*.—10. iv. 07.

*Observations*.—Described from a single perfect ♀. Near *U. testacea*, Theob., but has a pale blue line over the wings and a white venter.

*Type* in the British Museum.

#### URANOTAENIA TYPHLOSOMATA. Dyar and Knab (1907).

Journ. New York Ent. Soc. XV., 201 (1907).

“♂. Proboscis long and slender, much swollen at the apex, black scaled; antennae amply plumose; palpi very short, black scaled; occiput black scaled, margins of the eyes broadly bluish white scaled; mesonotum brown, with minute dark brown scales, scutellum with metallic blue scales, setae long, black; in front of the roots of the wings is a short stripe of silvery blue scales, and a similar blue stripe extending over the anterior half of the pleura and over the prothoracic lobes; metanotum dark brown; abdomen depressed, black scaled above and at the sides; legs black with bronzy lustre, knees with a minute silvery spot, and at the apices of the hind tibiae another; on the hind tarsi the apical three-fifths of the third and all of the fourth and fifth joints silvery white; wings black scaled along the costa, brown scaled on the veins, the base of the first vein with a patch of

silvery scales, the fifth vein with a line of silvery scales close to the base.

*Length.*—2 mm.

*Habitat.*—One specimen, Tabogo Island, Panama (A. H. Jennings, collector); bred from larvae from a pool in a small stream.

In the single specimen the thorax is somewhat denuded, and it is possible that there may be a blue spot before the antescutellar space."

*Type* apparently in National Museum, Washington.

**URANOTAENIA PYGMAEA.** Theobald (1901).

Mono. Culicid. II., 254 (1901).

Bupengary, Queensland.

*Type* in the British Museum.

*Notes.*—Dr. Bancroft says: "This is a beautiful little mosquito found resting just above the water-line in casks and water-butts, especially when nearly empty. I found them at Deception Bay, at Bupengary and Enaggera. It does not bite man, but evidently bites birds, for I have taken them gorged with avian blood. It is rather rare but present throughout the year. It oviposits in a small black raft; the upper ends of the eggs are studded with papillae to the naked eye, the raft looks like that of *Culex cylindricus*, and also like a small piece of that of *Culex tigripes*, with which mosquitoes this insect is associated. The larvae to the naked eye resemble *Anopheles* and feed on the surface on *Algae* and *Diatoms*. Examined microscopically they are seen to have a respiratory siphon."

**URANOTAENIA CAERULEOCEPHALA.** Theobald (1901).

Mono. Culicid. II., 256 (1901); III., 302 (1903), Theobald; Mosq.

Philip. Isls., 9 (1908), Ludlow.

Gambia; Old Calabar, West Africa; Entebbe, Uganda.

*Additional localities.*—Philippine Islands (Ludlow); Lagos.

*Type* in the British Museum.

**URANOTAENIA LATERALIS.** Banks (1906).

*Uranotaenia caeruleocephala* var. *lateralis*. Ludlow (1905).

Canad. Entomo. XXXVII., 385 (1905), Ludlow; Philip. Journ. Sci. I., 9, 990 (1906), Banks; Mosq. Philip. Isls., 10 (1908), Ludlow.

"Head covered with flat blue scales, becoming white around

the eyes, a couple of brown bristles between, and a few around the eyes, no fork scales ; the scales on the occiput change from a dark indigo or violet to a light blue, according to the direction of the light, and when viewed from the side may even seem brown with a wide white border around the eyes, but in other positions are some shade of blue ; antennae brown, verticels and pubescence brown, basal joint light testaceous, with a few thin flat scales ; palpi also light brown, very short, hardly longer than the depth of the clypeus, the last joint reduced to a knob ; proboscis dark brown, swollen at the tip ; clypeus testaceous ; eyes brown and silver.

Thorax brown, prothoracic lobes covered with flat scales, which change from white to bright blue ; mesothorax covered with long slender brown scales, slightly if at all curved, suggesting lateral wing scales in their general appearance, a median row of long brown bristles, and clusters of them near the wing joint and scutellum, a small bunch of flat changeable (bright blue to white) scales just cephalad of the wing joint ; scutellum brown, covered with brown flat scales, with green iridescence, and a few border-bristles ; pleura brown, with one large bunch of flat changeable (bright blue to white) scales on the mesopleura ; metanotum brown.

Abdomen brown, heavily covered with brown flat scales, with green iridescence, unbanded, but well marked lateral, apical white spots on each segment ; venter almost entirely light scaled.

Legs, coxae and trochanters light, and white scaled, femora all light ventrally, but brown dorsally, the tibiae much darker, and the remainder of the legs brown ; unguis very small, simple and equal.

Wings brown, covered with brown scales, the median broad, rather short, and often truncate, the lateral broadly lanceolate, and much longer than the median ; first submarginal cell much ( $\frac{1}{4}$ ) shorter and somewhat narrower than the second posterior, the stem nearly three times as long as the cell, and a third longer than that of the second posterior ; posterior cross-vein is about the same length as the mid cross-vein, and distant about its own length ; halteres white, a few dark scales on the knob.

*Length*.—2·5 mm.

*Time of capture*.—6. xxv. 05.

*Habitat*.—Cottabatto ; Mindanao, P. I.

*Observations*.—Described from four females sent by Lieut. E.

B. Vedder, Asst. Surgeon, U.S.A. The distinctive variation lies in the well-marked lateral spots, and if it should happen that Theobald described from rubbed specimens, that variation may disappear" (Ludlow).

*Note.*—The specimens I have seen of *caeruleocephala* are not rubbed as Miss Ludlow suggests. Miss Ludlow described this as a variety of my African species, but Banks raised it to specific rank. I have not seen the specimens, but I feel confident that the species is distinct.

**URANOTAENIA ALBOABDOMINALIS. nov. sp.**

Head pale blue; palpi and proboscis black. Thorax rich bright brown, a silvery-white line running up to base of wing for about half the length of the thorax, and another parallel one on the pleurae, which are ochreous.

Abdomen with the first four segments almost entirely creamy-

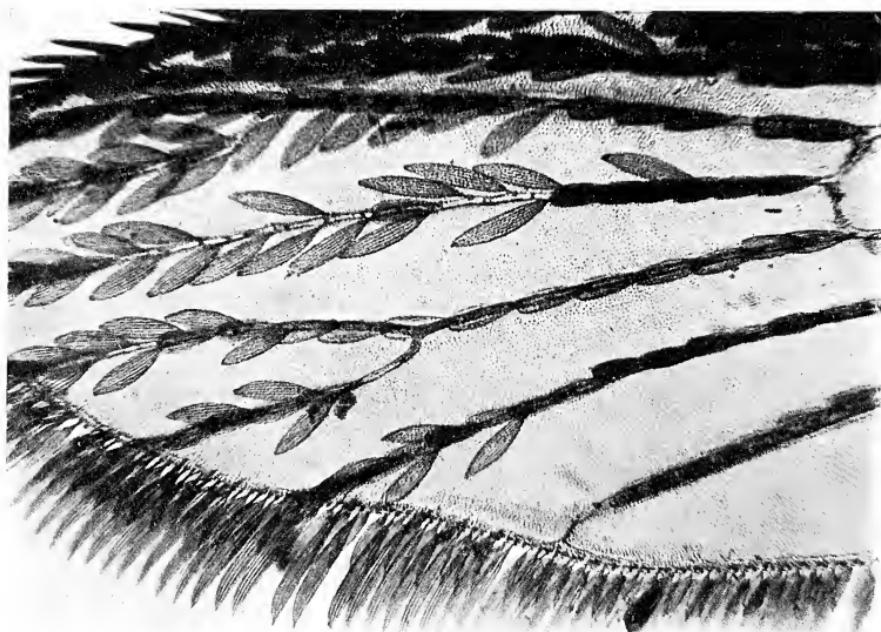


Fig. 215.

*Uranotaenia albo-abdominalis*, ♀. n. sp. Apex wing.

white scaled, rest dark with basal median creamy-white patches. Legs dark brown, unbanded.

♀. Head clothed with pale blue and some scattered creamy flat scales, deep violet in the middle at the back, dusky at the extreme sides, with *four* black upright forked scales and a large tuft of long creamy scales projecting between the eyes; few chaetae, black; palpi and proboscis black; antennae brown, basal segment bright testaceous.

Thorax bright brown, clothed with scanty dark and dull golden narrow-curved scales and a white line of spindle-shaped scales running from the base of the wings to about two-thirds the length of the mesonotum forwards, chaetae deep brown; scutellum clothed with small flat dusky scales; metanotum deep brown; pleurae pale ochreous with greyish areas, a broken line of flat white scales running from the prothoracic lobes, parallel with the line to the roots of the wings; both with very pale blue reflections; prothoracic lobes covered with very pale blue, almost white flat scales.

Abdomen with the 2nd to 5th segments almost entirely creamy-white scaled, a few brown ones at their bases, 6th, 7th and 8th segments with median creamy basal scales, not forming bands; basal segment very small brown; border-bristles pale golden.

Legs uniformly deep brown with bronzy reflections; unguis small, equal and simple.

Wings with brown scales, but with a white line at the base continuous with the white thoracic line; scales on ends of veins large and lanceolate, on most of third long vein, pale compared



Fig. 216.  
Wing of *Uranotaenia albo-abdominalis*. ♀. n. sp.

to median vein scales; first fork-cell shorter and slightly narrower than the second, its base much nearer the apex of the wing, its stem about twice as long as the cell; stem of the second fork-cell about one and a quarter as long as the cell; posterior cross-

vein longer than the mid, about one and a third times its own length distant; apex of second long vein close to the first.

*Length*.—3 mm.

♂. Head more white scaled than the ♀, with more dark upright forked scales in the middle; antennae with pale internodes, plume hairs brown.

Thorax and abdomen as in ♀. Fore and mid unguis unequal, curved, simple; hind equal and simple.

Wing very much like the ♀ (vide figure 217).



Fig. 217.

Wing of *Uranotaenia albo-abdominalis*. ♂. n. sp.

*Length*.—3 mm.

*Habitat*.—Bor to Mongalla, Sudan (Harold King).

*Time of capture*.—19 and 20. v. 09.

*Observations*.—Described from two perfect ♀'s and one ♂. A very marked species easily known by the white basal area of the abdomen, which in some lights is quite white, in others creamy. Mr. King took nine specimens.

*Types* in the British Museum.

#### URANOTAENIA MALAYI. Theobald (1901).

Mono. Culicid. II., 258 (1901).

Selangor, Malay States.

*Type* in the British Museum.

#### URANOTAENIA ATRA. Theobald (1905).

Ann. Mus. Nat. Hung. III., 114 (1905); Mono. Culicid. IV., 563 (1907), Theobald.

Muina, New Guinea.

*Type* in the National Museum, Budapest.

**URANOTAENIA PALLIDOCEPHALA.** Theobald (1908).

Third Rept. Well. Res. Labs., 266 (1908), Theobald.

Head clothed with pale grey scales, looking almost silvery in some lights. Thorax with a white scaled line extending from the middle of the scutellum to about half across the mesothorax; a white line on each side in front of the roots of the wings; prothoracic lobes white scaled. Abdomen brown unbanded, with apical lateral pale spots. Legs unbanded. White scales at the base of the first and fourth veins.

♀. Head clothed with flat grey scales, showing silvery white in some lights, some at the back with a dull violet tint; upright forked scales black; antennae dark brown, basal segment testaceous on the outside; palpi and proboscis brown; clypeus brown.

Thorax rich brown with narrow-curved bronzy scales; a white scaled line on each side in front of the wings and a line of white scales extending from the scutellum to the middle of the mesothorax; sides somewhat paler; scutellum paler than mesothorax with small flat dark scales, some white ones extending on to the mid lobe from the white line in front; four large black bristles to the mid lobe and one small central one; metanotum deep brown; pleurae testaceous with traces of pale scales.

Abdomen deep brown with apical lateral pale spots; venter ochreous.

Legs brown, unbanded; unguis equal and simple.

Wings with brown scales except at the base of the first long

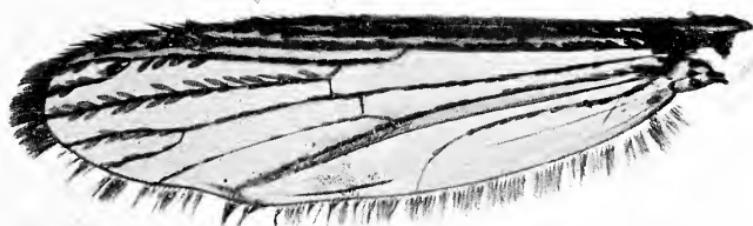


Fig. 218.

Wing of *Uranotaenia pallidocephala*. ♀. Theobald.

vein and the base of the fourth, where there are lines of flat white scales; large clavate scales on the apical portions of the second and fourth and on all the third; fork cells small and

wide, the first smaller than the second, its base much nearer the apex of the wing than that of the latter, its stem less than three times the length of the cell; stem of the second fork cell about one and a half times the length of the cell; mid and posterior cross-veins about equal in length, the latter more than its own



Fig. 219.  
Apex of wing of *Uranotaenia pallidocephala*. ♀. Theobald.

length distant from the mid; sixth long vein broadly curved towards the costa.

*Length*.—2·5 to 3 mm.

*Habitat*.—Sudan (H. King); Lagos (Dr. Graham).

*Observations*.—Easily told by the pale scaled head, and by the wing venation. The head scales show dull purple shades behind in some lights.

*Type* in the British Museum.

#### URANOTAENIA ABNORMALIS. nov. sp.

Very similar to the former (*U. pallidocephala*) but the head bright violet blue as in *caeruleocephala*, the cross-veins differ and the male legs very marked.

♀. Head clothed with bright violet blue flat scales and a few upright black forked scales, black chaetae, two long ones close together projecting between the eyes; eyes silvery; antennae brown, basal segments testaceous, slightly darkened on the inner side; proboscis and palpi deep brown.

Thorax pale brown with scattered narrow-curved bronzy

black scales and blackish chaetae ; a line of white scales on each side in front of the wings, and one running from the scutellum to the middle of the mesonotum ; prothoracic lobes with silvery white flat scales ; pleurae dark above (forming more or less of a dark line) pale testaceous below, with some flat silvery white scales ; scutellum with small flat black scales ; metanotum pale brown with a medium dark line.

Abdomen dark brown, with violet reflections and with apical lateral spots on the last few segments, pale dull golden to brown border-bristles and pale scaled venter.

Legs dark brown, with a dull metallic coppery tinge ; unguis equal and simple.

Wings with brown scales, except for a line on the base of the first and fourth veins which are shiny white ; first sub-marginal cell shorter and narrower than the second posterior cell, its stem not quite three times the length of the cell, its base nearer the

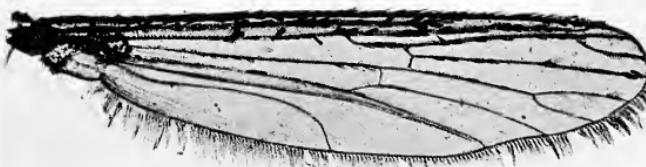


Fig. 220.  
Wing of *Uranotaenia abnormalis*. ♀. n. sp.

apex of the wing than that of the second posterior cell ; stem of the second posterior cell about one and a third times the length of the cell ; posterior cross-vein slightly longer than the mid about its own length distant from it and sloping towards the junction of the supernumerary and second vein.

Halteres with grey stem and fuscous knob.

*Length*—2·8 to 3 mm.

♂. Head as in the ♀ ; antennae brown with dusky plume hairs, pale at the tips ; proboscis and palpi black.

Thorax as in the ♀, also the abdomen.

Legs unbanded ; fore legs with short thick metatarsi nearly one-half the length of the first tarsal, last tarsal very small ; tibia with claw-like apical spine, unguis equal and simple, curved almost at a right angle, broad, spines above ; the segments following metatarsi, thin and bent ; mid legs with short metatarsi, second

tarsal normal, third bent under the fourth and projecting with two dark unequal claws, like unguis and with two lateral leaf-like processes on each side of the claws, unguis on terminal



Fore leg.



Mid leg.



Hind leg.



Hind leg further enlarged.

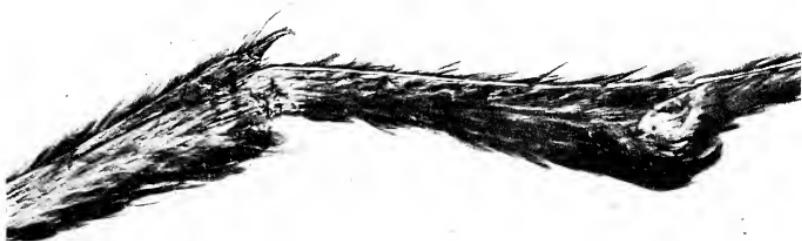
Fig. 221.

Legs of ♂ *Uranotaenia abnormalis*. n. sp.

segment equal and simple; hind legs with the tibiae with five basal bristles in a row, contracted at one-third their length, where there is a tuft of five long orange to brown spines of

nearly equal length, three together bent apically and also a sixth much longer spine, near the middle of tibia is a single long spine; metatarsi and tarsi thin, unguis equal and simple.

Wings much as in the ♀; the first fork-cell much smaller



Metatarsus of fore leg.



Foot of mid leg.



Tibia of hind leg.

Fig. 222.

Structure of the legs of ♂. *Uranotaenia abnormalis*. n. sp.

than the second, its base much nearer the apex of the wing, its stem nearly three times the length of the cell, stem of second fork-cell about one and a half times the length of the cell; posterior cross-vein longer than the mid, about one and a half times its own length distant; second long vein close to first.

Genitalia small and hidden ; claspers thick and blunt, basal lobes triangular.

*Length.*—3 mm.

*Habitat.*—Sudan, Bor to Mongalla, 21 specimens including 3 ♂'s (Harold King).

*Observations.*—Described from 4 ♀'s and 2 ♂'s, the latter



Fig. 223.

Wing of *Uranotaenia abnormalis*. ♂. n. sp.

recently taken by Mr. King. It is evidently closely related to *U. pallidocephala*. The males are most remarkable on account of the peculiar legs, which are figured here. I know of no such in any other Culicine. They were sent by Mr. King as being *pallidocephala* and they certainly bear a close resemblance to the ♀'s. The head is, however, a constant bright blue in this species, and the cross-veins are different in the ♀.

*Types* in the British Museum.

#### URANOTAENIA ALBA. Theobald (1907).

*Uranotaenia mashonaensis* var. *alba*. Theobald (1901).

Mono. Culicid. II., 262 (1901); IV., 303 (1907), Theobald.

Salisbury, Mashonaland.

*Type* in the British Museum.

#### URANOTAENIA MINIMA. Theobald (1901).

Mono. Culicid. II., 262 (1901).

Quilon, Travancore, S. India.

*Type* in the British Museum.

## URANOTAENIA BILINEATA. nov. sp.

Head dark in the middle, white around the eyes. Thorax bright brown, a thin pale almost white line in front of the roots of the wings, a longer parallel one below extending from the head to the wings. Abdomen deep brown, unbanded, paler below. Legs brown, the hind pair with apical and basal creamy banding, last two tarsi all creamy white.

♀. Head clothed with flat black scales in the middle, white ones around the eyes and blue ones at the sides, upright forked scales black; chaetae black; palpi and proboscis deep brown, the latter hairy at the apex; antennae deep brown, basal segment bright testaceous; eyes metallic violet, coppery and silvery. A tuft of white scales projects between the eyes.

Thorax rich brown in the middle, darker at the sides, with narrow-curved bronzy scales and black chaetae; a thin line of broader white scales in front of the roots of the wings and another of flat white scales extending from the white scale prothoracic lobes to the end of the mesonotum, parallel with the shorter one above; scutellum bright brown with small flat dusky scales and four brown median posterior border-bristles; metanotum black.

Abdomen dusky black, unbanded, posterior border-bristles pale golden; venter creamy scaled and some pale scales at the apex above; lateral hairs golden.

Legs, fore and mid pairs ochreous brown, paler feet, very faint traces of pale banding; hind legs with the base and apex of the metatarsi, first and second tarsal segments broadly yellow, last two segments pale yellow, almost creamy; femora pale at the base and below.

Wings with the basal half of the first long vein creamy scaled, rest brown; first fork-cell slightly shorter and narrower than the second fork-cell, its base a very little nearer the apex of the wing, its stem about two and a half times the length of the cell; stem of the second posterior about one and a half times the length of the cell; posterior cross-vein a little more than its own length distant from the mid cross-vein; halteres with dusky ochreous stem and fuscous knob.

Length.—2·5 mm.

♂. Ornamentation similar to the ♀. Plumose antennae brown. Fore unguis unequal, simple, the larger rather broad;

mid unequal and simple, the larger sickle-shaped; hind equal and simple.

*Length*.—2·5 mm.

*Habitat*.—Obuasi (Dr. Graham).

*Time of capture*.—12. x. 07, and 13. ix. 07.

*Observations*.—Taken in the bush at 11 A.M. and 5 P.M. Described from a perfect ♀ and ♂. This species can at once be told by the two pale lateral parallel lines on the sides of the thorax. In the ♀ the upper one seems marked dark above, but this appears to be shadow.

*Type* in the British Museum.

**URANOTAENIA CALOSOMATA.** Dyar and Knab (1907).

Journ. New York Ent. Soc. XV., 201 (1907).

" Proboscis moderately long and slender, slightly enlarged apically; clypeus and tarsi dull brown; occiput brown scaled with two oblique lines of white scales, which converge upon the vertex and terminate in a white tuft; thorax deep brown, on the lateral margin a line of white scales to the base of the wing; pleura brown with a longitudinal stripe of white scales extending forward over the prothoracic lobe and joining the stripe on the head; metanotum brown. Abdomen black scaled at the sides, above clothed with ochreous-yellow dull metallic scales leaving a narrow black line at the base of each segment, becoming broader on the terminal segments and a sub-basal median black spot; beneath with black vestiture and apical white bands, which are broadest on the centres of the segments. Legs black with bronzy and brassy lustre, the apices of the femora white; on the hind legs the dilated apices of the tibiae have a patch of white scales; hind tarsi with the third, fourth and fifth joints white with metallic lustre. Wings heavily dark brown scaled on the costa, the basal third of the first vein white scaled, the two fork-cells small but broad, the second posterior cell slightly longer than the second marginal cell.

*Length*.—2·5 mm.

Five specimens, Tabernilla, Canal zone, Panama (August Busck, collector), bred from larvae in prints of horses' feet containing water."

**URANOTAENIA TESTACEA.** Theobald (1905).

Ann. Mus. Nat. Hung. III., 113 (1905); Mono. Culicid. IV., 560 (1907).

Singapore; base of Dawna Hills, Burma, 4. iii. 08, 2 ♀'s (N. Annandale):

*Type* in National Museum, Budapest. Burma specimens in Indian Museum, Calcutta.

**URANOTAENIA POWELLI.** Ludlow (1909.)

Canad. Entomo. XLI, 235 (1909).

"♀. Head covered with brilliant blue flat scales, except a band of dark brown flat scales, and a few dark brown fork scales on the nape, a very few bristles projecting forward between and around the eyes; antennae brown, verticels and pubescence brown, basal joints testaceous; palpi dark brown; proboscis dark brown, very long; clypeus brown, with 'frosty tomentum'; eyes dark brown.

Thorax: prothoracic lobes testaceous, covered with dark brown flat scales and a few brown bristles; mesonotum light testaceous on the cephalad and laterad portions, and dark brown in the median portion, widening near the wing and extending to the scutellum, the whole covered with very slender dark brown hair-like curved scales; scutellum light testaceous in the median part of the mid lobe, otherwise dark and covered with dark brown flat scales; pleura dark brown, heavily covered with white flat scales; metanotum brown.

Abdomen: first segment entirely brown-scaled, the rest banded with brilliant white scales near the apex of the segments, the brown base of each segment wider than the brown apex; venter with soft light yellow scales.

Legs: coxae and trochanters almost white, with a few dark scales; femora all light ventrally, dark brown dorsally, while on the cephalic aspect there are on the fore legs two brilliant white spots, on the mid legs a basal white line extending nearly half the length of the femora, with two white spots nearer the apex, and on the hind femora two white spots, otherwise the legs are very dark brown, though the scales may look even ochraceous in some lights; ungues small, simple and equal.

Wings clear, heavily scaled with dark brown scales; the cells are short, the first sub-marginal the same length as, but much

narrower than, the second posterior; supernumerary and mid cross-veins meet and are nearly equal, the posterior a trifle shorter than the mid and about its own length distant. Halteres light stem and dark knob, but heavily dark scaled on both. The scales on the costa are noticeably spine-like.

*Length*, without proboscis, 4·5 mm.; proboscis, 3 mm.

*Habitat*.—Camp Wilheim, Yayabas, P. I. (Dr. W. A. Powell). Taken Jan. 3, 1909" (Giles).

**URANOTAENIA APICOTAENIATA. nov. sp.**

Head large, creamy white. Thorax rich reddish-brown, pleurae pale ochreous with pale scales above; a sharp dividing line between the pleurae and dark mesonotum.

Abdomen deep brown with prominent apical creamy bands, venter pale. Hind legs with marked apical white bands, last two tarsi all white.

♀. Head brown, clothed with rather loose ochreous flat scales in front, grey ones behind with pale brown upright forked scales, deep brown chaetae; palpi, proboscis, and antennae brown.

Thorax deep brown, with narrow-curved bronzy-brown scales and deep brown chaetae; scutellum paler with flat dusky scales, four median posterior border-bristles, dark brown; metanotum deep brown; pleurae and prothoracic lobes pale ochreous with irregular flat semi-transparent whitish scales, the junction of the pale pleurae and the dark mesonotum very marked.

Abdomen deep brown with broad apical creamy-scaled bands, not marked on the two basal segments; border-bristles pale brown; venter pale scaled, traces of narrow dark scaled basal bands on some of the segments.

Legs, fore and mid, brown, a pale spot at apex of the tibiae, and just traces at apex of metatarsals and first tarsals; hind legs with the apex of the tibiae, first and second tarsals prominently white, last two hind tarsi all white.

Wings with brown scales, some pale ones at the base of the fourth and fifth near the root of the wings; first fork-cell much smaller than the second, its stem about three times the length of the cell, its base much nearer the apex of the wing, stem of the second fork-cell nearly twice as long as the cell; posterior cross-vein about its own length distant from the mid. Halteres with pale stem and fuscous knob.

*Length*.—2·5 mm.

♂. Similar to the female; the densely plumed antennae with ochreous brown plume hairs; the end tarsi of the fore and mid legs are pale ochreous below; fore and mid unguis unequal, simple.

*Length*.—2·5 mm.

*Habitat*.—Obuasi, Ashanti (Dr. Graham).

*Time of capture*.—7. viii. 07, and 3. x. 07.

*Observations*.—Described from a perfect ♀ and ♂. The leg banding and thoracic ornamentation at once separate it.

*Type* in the British Museum.

#### URANOTAENIA ORNATUS. nov. sp.

Thorax clear ochreous yellow in front, rich brown behind; pleurae pale clear ochreous. Palpi, antennae, and proboscis brown. Abdomen brown with basal narrow indistinct pale bands and pale ochreous venter. Legs uniform brown with ochreous reflections.

♂. Head dark clothed with flat dark scales with dull violet reflections and some black chaetae; antennae plumose, brown, basal segment large and rich brown, plume hairs brown; proboscis and palpi brown, the latter very small; proboscis slightly expanded at the apex.

Thorax ochreous yellow in front with rather long scanty narrow-curved pale yellowish scales and traces of three paler lines on the integument, the median is only distinct; posterior half of thorax rich brown with black narrow-curved scales and black chaetae, sides of mesothorax and pleurae pale clear ochreous; the pale area passing around just over the roots of the wings; scutellum paler brown with small flat dusky scales, four chaetae to central lobe; metanotum brown.

Abdomen narrow, brown, with traces of pale areas at the base of the segments, which, together with the pale posterior border-bristles, gives a basally pale banded appearance, and the scales are also paler at the bases, forming bands; small pale ochreous patches of scales laterally at the base of the segments; venter ochreous with pale ochreous and semi-transparent scales, with a few dusky ones; apex with rather dense golden chaetae.

Legs brown, with ochreous reflections, base pale; tibiae ochreous at the apices; chaetae brown.

Wings with the veins on the costa, sub-costal and first long

vein deep violet, remainder pale brown ; scales large and scanty ; first fork-cell a little shorter and narrower than the second fork-cell, its base a little nearer the apex of the wing, its stem about twice the length of the cell, stem of the second posterior one and a half times the length of the cell ; posterior cross-vein nearly twice its own length distant from the mid. Halteres ochreous with fuscous knob.

*Length.*—2 to 2·5 mm.

*Time of capture.*—3. xi. 07. (October and November).

*Habitat.*—Obuasi, caught in bush 5 P.M. (Dr. Graham).

*Observations.*—Described from four ♂'s ; the abdominal banding is more distinct in two than the other two. The markedly-adorned thorax at once separates the species. Dr. Graham describes the anterior half of the thorax as pale orange, so that probably the colours have faded in death.

*Type* in the British Museum.

#### URANOTAENIA (?) BIMACULATA. nov. sp.

Head black scaled. Thorax bright ferruginous with a large round black spot just in front of the base of each wing. Abdomen deep brown, unbanded. Legs brown, unbanded.

♀. Head clothed with flat black scales with violet reflections, a few ochreous ones at the sides, and dark upright forked scales ; eyes black, silvery around the edges ; clypeus pale brown ; proboscis deep brown, apex testaceous ; palpi small, brown, with rather long black chaetae ; antennae brown, basal segment pale testaceous with some white scales.

Thorax bright orange brown, with violet tinges in the middle, a large black spot just in front of the base of each wing, from which arise long jet-black chaetae ; on the dorsum are indistinct dusky narrow-curved bronzy scales, chaetae black ; scutellum much denuded, brown with apparently flat dusky-brown scales ; metanotum deep brown in middle, paler at the sides ; pleurae bright brown with some patches of pale scales.

Abdomen deep brown, unbanded, with dusky border-bristles ; venter dull ochreous with some pale scales.

Legs ochreous brown, darker towards the feet ; femora paler below, with violet reflections above ; a pale spot at the apex of the hind tibiae.

Wings with brown scales ; the first fork-cell about as long as the second, its stem one and a third times its length, its base

slightly nearer the apex than that of the latter, not quite as wide; stem of the second fork-cell rather longer than the cell,

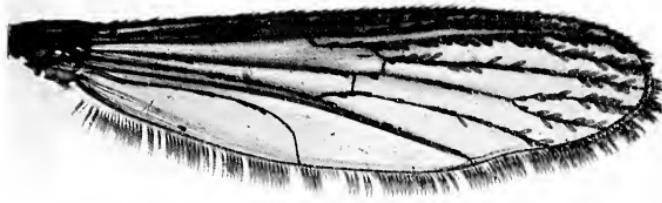


Fig. 224.  
Wing of *Uranotaenia* (?) *bimaculata*. ♀. n. sp.

posterior cross-vein about one and a third of its own length distant from the mid.

*Length*.—2·5 mm.

*Habitat*.—Obuasi, Ashanti (Dr. Graham).

*Time of capture*.—12. x. 07.

*Observations*.—Described from one ♀ caught in the bush at 5 P.M.

The scutellum is almost completely denuded. Only two scales can be seen, and these are flat, and thus tend to show it is a *Uranotaenia*; but as they cannot be definitely stated to belong to the scutellum in its denuded state, and as the fork-cells are longer than in *Uranotaenia* and approach *Mimomyia*, I put a query against the genus. The species is very marked, owing to the bright thorax with two large black spots.

#### URANOTAENIA FUSCA. Theobald (1907).

Mono. Culicid. IV., 584 (1907).

Mount Aureol, Sierra Leone.

*Type* in the British Museum.

#### URANOTAENIA (?) NITIDOVENTER. Giles (1904).

Journ. Trop. Med., 368, Dec. 1 (1904), Giles; Phil. Journ. Sci. I., 9, 990 (1906), Banks.

Closely resembles *U. caeruleocephala*, Theob., but has the venter marked by white apical bands, which in certain lights are brilliantly luminous, though rather dull seen in certain other directions. There are glistening white spots on the outer sides of the femora near the apex, especially marked on the hind legs. The large prothoracic lobes

are brilliant blue, and there is a frontal protuberance like that of *Runchomyia*, but the metathorax appears nude.

The female palpi are very small, and the extremely long proboscis is paler at the tip. The wing has the fork-cells rather longer than is usual in the genus.

A rather small species.

*Habitat*.—The Philippine Islands. “Caught in the woods.”

*Note*.—C. S. Banks says: “This species is identical with *Runchomyia philippinensis*, Giles, and belongs to neither of these genera, though I cannot now place it.” 10. ix. 08. Note in British Museum on type.

Carter has examined the type, and says it is certainly not a *Uranotaenia*, and is the same as *Runchomyia philippinensis*.

#### GENUS PSEUDOURANOTAENIA. Theobald (1905).

Journ. Geo. Biol. I., 33 (1905); Mono. Culicid. IV., 566 (1907), Theobald.

Two new species have been added to this genus by Miss Ludlow, so that it contains at present three species. Unfortunately I have been unable to see either of Miss Ludlow's species.

#### PSEUDOURANOTAENIA ROWLANDII. Theobald (1905).

Journ. Eco. Biol. I., 34 (1905); Mono. Culicid. IV., 567 (1907).

Stanley Town, New Amsterdam, British Guiana.

*Type* in the British Museum.

#### PSEUDOURANOTAENIA PARANGENSIS. Ludlow (1908).

Mosq. Philip. Isls., 10 (1908), Ludlow (nom nud).

“Head brown, covered with flat scales, dark brown except a broad band of white scales around the eyes, meeting at the vertex, a few black bristles projecting forward; antennae brown, verticels and pubescence brown, basal joint testaceous; palpi minute, brown; proboscis brown, apex swollen; clypeus brown; eyes brown.

Thorax: prothoracic lobes heavily clothed with white flat scales; mesonotum brown, partly denuded, but with brown curved scales scattered over it and more completely covering it laterally, a line of outstanding white or bluish-white scales

extending from the wing joint cephalad about one-half the length of the mesonotum; scutellum brown, with brown flat scales; pleura dark brown, with a pronounced line of white flat scales; metanotum brown.

Abdomen brown, with dark brown scales and a white median spot extending over most of the dorsal aspect on the first, second, third and fourth segments, better developed on the third and fourth; venter light.

Legs: coxae and trochanters light; femora brown, ventrally lighter; tibiae brown, and on the fore and mid legs all the tarsal joints brown; on the hind legs the first and second tarsals are brown, the third, fourth and fifth pure white; unguis simple and equal.

Wings partly denuded, mostly brown-scaled, but half the length of the stem of the fifth, and the bases of the sixth with white roundish scales; fringe unspotted; the cells very short, the first submarginal a little shorter and somewhat narrower than second posterior cell; mid and supernumerary cross-veins of about equal length and they meet, posterior cross-vein longer than mid and its own length distant interiorly. Halteres with white stem and black knob.

*Length*.—About 5 mm., of which the proboscis is nearly 2.5 mm.

*Habitat*.—Parang Mindanao, P.I.

*Taken*.—Collection undated, summer of 1908.

From the Philippines comes a well-marked mosquito, apparently belonging to Theobald's *Pseudouranotaenia*, but, having very broad unguis, not mentioned in the description of the type." (Ludlow.)

#### PSEUDOURANOTAENIA TRIANGULATA. Ludlow (1908).

Mosq. Philip. Isls., 10 (1908), Ludlow.

"Head dark, densely covered with white flat scales, having a bluish tinge and a few brown bristles; antennae light and apparently lacking pubescence, verticels brown, basal joint testaceous; palpi brown, proboscis brown, some outstanding scales near the tip on one specimen, labellae light, eyes brown and gold, clypeus dark brown.

Thorax: prothoracic lobes brown, with white, flat, broadly round-ended scales, a few brown bristles; mesonotum brown, covered for the most part with slender brown curved scales, but

with a band of flat, white, broadly 'round-ended' scales running cephalad from the wing joints, and meeting at the nape, making a continuous line of bluish-white around the latero-cephalic edge of the mesonotum, many long brown bristles near the scutellum; scutellum brown, markedly lobed, with flat brown scales and very long brown bristles; pleura brown, with brown flat scales, shaped like those on the mesonotum, and a line of flat white scales running diagonally across; metanotum brown.

Abdomen covered with black scales except a triangular apical spot (apex toward the base of the segment) of brilliant white scales, the spot sometimes extending to the base of the segment; venter black, except a few white scales forming a median line.

Legs: coxae and trochanters light, with brown scales. The remainder of the legs covered with brown scales except in the hind legs, which have the fourth and fifth and the distal half of the third joint pure white, mid femora markedly swollen. Ungues missing on all but the hind legs, where they are white, simple and very broad, rather leaf-like.

Wings clear, almost white, partly denuded, but with broad scales, some of them symmetrical as in *Mansonia*, others suggesting the 'heart-shaped' scales of *Etorleptomyia*, mostly brown, but some white scales, an irregular white spot just exterior to the root of the third long-vein, and extending on the second long and subcosta, but not on the costa, costal scales as in *Uranotaenia*. The cells very short, first submarginal at least one-third shorter than, and not so wide as the second posterior cell; supernumerary and mid cross-vein about the same length, meeting at an angle, and the posterior cross-vein about one-half the length of, and three times its length distant, anteriorly, from the mid.

*Length.*—3·5–4 mm.

*Habitat.*—Reine Regente, Mindanao, P.I.

Taken February.

The markings are distinctive, the triangular spots on the abdomen being very noticeable."

**GENUS ANISOCHELEOMYIA.** Theobald (1905).

The Entomologist, XXXVIII., 52 (1903); Mono. Culicid. IV., 570 (1907), Theobald.

Five species are definitely known to occur in this genus and possibly a fourth.

**ANISOCHELEOMYIA NIVIPES.** Theobald (1905).

The Entomologist, XXXVIII., 53 (1905); Mono. Culicid. IV. (1907).

Queensland.

*Type* in the British Museum.

**ANISOCHELEOMYIA ALBO-ANNULATA.** Theobald (1905).

The Entomologist, XXXVIII., 54 (1905); Mono. Culicid. IV., 573 (1907).

India.

*Type* in the British Museum.

**ANISOCHELEOMYIA LEUCOPTERA.** Theobald (1907).

Mono. Culicid. IV., 575 (1907).

Stanley Town, New Amsterdam, British Guiana.

*Type* in the British Museum.

**ANISOCHELEOMYIA QUADRIMACULATA.** Newstead (1907).

Anns. Trop. Med. and Parasit. I., No. 1, 32 (1907).

" Head pale brown with narrow ochreous margins. Antennae dusky. Proboscis swollen at tip; black with scattered bright ochreous scales; labellae bright ochreous. Thorax bright ochreous with four black spots, the anterior pair being much the largest; behind the second and smaller pair is a large and somewhat ill-defined black band. Abdomen black with a dorsal series of elongated pale spots. Legs spotted and banded; femora dilated apically. Wings with scattered black scales, those along the costa forming a basal bar and two spots.

♀. Head with both black and pale cream-coloured upright forked scales, the latter predominating; anterior portion with rather large narrow-curved bright fulvous scales and apparently a few long flat ones; intermixed with the former are a few black ones tipped with bright fulvous; sides with flat, somewhat

loose cream-coloured scales. Antennae dusky-brown, nodes pale. Palpi densely scaled, black, dorsally with white tips. Proboscis

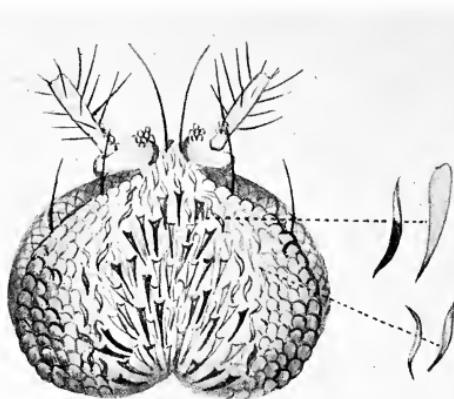


Fig. 225.

Head of ♀ *Anisocheleomyia quadrinotata*. Newstead (after Newstead).

swollen apically; scales black, intermixed with a few cream-coloured ones; swollen portion entirely black; labella bright ochreous.

Legs with the anterior femora pale ochreous with a black apical patch, in the centre of which is a distinct central crescentic band; mid and hind femora black, the former with two, the latter with one yellowish band; tibiae black, each with a sub-apical, but somewhat diffused band; tarsi black with bronzy-brown reflections, each with five distinct yellowish bands; unguis equal, simple.

Wings with bronzy-black and cream-coloured scales; basal half of costa with a long black bar and two irregular spots; all the nervures with irregular groups and isolated black scales; fringe pale; costal scales bronzy-black, becoming paler towards the apex; outstanding scales claviform; a few of the black ones, especially those on the sixth vein, heart-shaped. Halteres cream-coloured with dark brown scales at the tips.

Thorax with narrow-curved golden-yellow scales; four lateral spots of black ones, the anterior pair are the largest, and there is a broad indefinite band behind the second pair; scutellum with pale ochreous, narrow-curved scales; metanotum black with three dusky-yellow lines and a basal linear patch of minute, flat,

cream-coloured or white scales; prothoracic lobes and pleurae with flat, dull, cream-coloured scales.

Abdomen clothed with black scales, having brownish-coppery reflections; each segment with a long narrow median basal patch of dull cream-coloured scales; apical segment only with prolaternal pale spots; venter ochreous.

*Length*.—3·75 mm.

*Habitat*.—Boma, Congo Free State. Bred from larva caught in marshy pool."

**ANISOCHELEOMYIA ? ALBITARSIS.** Ludlow (1905).

Canad. Ent. XXXVII., 131 (1905), Ludlow; Philip. Journ. Sci. I., 9, 990 (1906), Banks; Mono. Culicid. IV., 577 (1907), Theobald; Mosq. Philip. Isls., 10 (1908), Ludlow.

*Note*.—This was recorded by Miss Ludlow from Pampanga, Camp Stotsenberg; Angeles, Philippine Islands (G. R. Whitmore). Its position is doubtful.

**GENUS SQUAMOMYIA.** Theobald (1910).

Rec. Ind. Mus. IV., 28 (1910).

Head clothed with flat scales and upright forked ones behind; *clypeus densely scaled, scales long and broad*; antennae of male plumose; palpi small and thin; proboscis long and thin, not as long as the body.

Thorax with spindle-shaped scales, small flat ones at the sides in front; broad spindle-shaped ones on the prothoracic lobes, densely covering them; scutellum with flat scales. Wings of male with short fork-cells. Abdomen clothed with very large flat scales, somewhat loosely applied.

This forms a very distinct genus, easily told by the densely-scaled clypeus. The male genitalia also seem very marked, but have not been dissected.

A male only occurs in the collection of the Indian Museum, Calcutta.

**SQUAMOMYIA INORNATA.** Theobald (1910).

Rec. Ind. Mus. IV., 28 (1910).

Head deep brown, a pale border around the eyes; clypeus prominently pale scaled; palpi, proboscis and antennae deep

brown. Thorax deep brown, grey in front and at the sides in front, pleurae white. Abdomen deep blackish-brown above, white below and at the sides. Legs deep brown.

♂. Head clothed with flat brown scales with violet reflections, a border of flat white ones around the eyes, spreading out laterally, dull ochreous brown upright forked scales behind; two bright golden chaetae projecting between the eyes in front, and a few short dark ones at the sides; clypeus ochreous with long white scales, especially dense in front; proboscis thin, black, not as long as the whole body, curved downwards; palpi ochreous, dark scaled above, thin, very short; antennae very pale brown, with dark plume hairs, basal segment bright ochreous except on the inner side, where they are dark.

Thorax black with bronzy-brown spindle-shaped scales, white in front near the head and small flat white scales on each side in front; prothoracic lobes densely clothed with white spindle-shaped scales; scutellum brown with brown flat scales, those at the sides with pale ochreous reflections; pleurae black with flat white scales.

Abdomen narrow, clothed with deep blackish-brown scales with violet reflections and with white scales laterally and ventrally.

Legs deep brown with violet reflections, unbanded, coxae pale with white scales; under side of femora white; fore and mid ungues unequal, simple; hind equal and simple.

Wings with short fork-cells; the first very little longer, but narrower than the second, its base nearer the apex of the wing, its stem more than two-thirds the length of the cell, stem of the second posterior two-thirds the length of the cell; posterior cross-vein as long as the mid and more than its own length distant from it.

*Length*.—5 mm.

*Habitat*.—Dawna Hills, L. Burma. 2,000–3,000 feet.

*Time of capture*.—2 and 3. iii. 08 (N. Annandale).

*Observations*.—Described from a single ♂. It is a very marked *Aedine*, at once told by the densely long scaled clypeus.

*Type* in the Indian Museum, Calcutta.

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GENUS **MIMOMYIA**. Theobald (1903).

Mono. Culicid. III., 304 (1903).

Seven species are so far described in this genus. They tabulate as follows :—

## A. Legs with apical and basal pale banding.

Last hind tarsal creamy.

Thorax shiny brownish-black; abdomen with basal pale yellow bands spreading out laterally ..... *minuta*. Theobald.

## AA. Legs unbanded.

Thorax with apple-green scales; abdomen violet-brown, base and apex ochreous; narrow basal pale lines to abdominal segments ..... *splendens*. Theobald.

Thorax testaceous, with black scales; abdomen brown, with black-brown scales; apical segments, with scattered creamy scales ..... *uniformis*. Theobald.

Thorax deep shiny brown in middle, with a broad yellowish testaceous border at sides and in front; abdomen with traces of pale, nearly basal spots most prominent on apical segments ..... *circumtestacea*. Theobald.

Thorax dark brown, with bright blue reflections; pleurae pale ochreous; abdomen unbanded, venter paler... *malfeysi*. Newstead.

Uniformly brown; legs pale ..... *africana*. Newstead.

Thorax bright rufous; pleurae pale dull creamy-yellow; abdomen dark brown ..... *mashonaensis*. Theobald.

**MIMOMYIA MINUTA**. Theobald (1908).

Rec. Ind. Mus. II., p. 301 (1908), ♂ ; III. (1910), ♀.

Thorax shiny brown-black; head pale creamy yellow; abdomen brown with basal pale yellow bands spreading out laterally. Legs with apical and basal pale banding; last hind tarsal pale creamy.

♀. Head clothed with flat pale creamy scales and some black upright forked ones at the back; two long pale chaetae projecting forwards in the middle in front and some dark incurved ones at the sides; antennae deep brown, basal segment black.

Thorax shiny black, with scattered long curved black scales and very long black chaetae; scutellum shiny black with long

curved black scales and black border-bristles ; metanotum black ; pleurae ochreous.

Abdomen ochreous with deep brown scales, rather scanty basally, giving a false banded appearance, with basal lateral areas of pale scales ; border-bristles pale.

Legs brown to almost black ; coxae and under side of femora pale ; apex of femora and tibiae white, the remaining segments with apical and basal pale creamy bands, last hind tarsal with all pale scales, in the other legs pale in certain lights.

Wings with the first fork-cell very little longer and narrower than the second, its stem nearly as long as the cell ; stem of the second fork-cell not quite as long as the cell ; posterior cross-vein longer than the mid, rather more than its own length distant from it ; scales large and brown.

*Length.*—2·5 mm.

♂. Head small, triangular in outline, clothed with small flat dull ochreous scales behind and dull brown darker ones in front, some large black upright forked-scales behind ; antennae long, brown, basal segment shiny reddish-brown with a long bristle, second segment long, longer than the next three, pale at its base, hairs moderate (not plumose) ; proboscis deep brown, long and thin, swollen apically, nearly as long as the whole body, clypeus small, triangular, dark brown, palpi very short, thick and conical.

Thorax deep shiny brown, with brown chaetae (denuded), showing some narrow-curved bronzy-brown scales ; scutellum black with narrow-curved bronzy-brown scales, with deep brown border-bristles, four to the mid lobe ; metanotum deep brown, paler in the middle, pleurae pale ochreous with an irregular dark central patch.

Abdomen deep brown, the segments with basal creamy bands which are contracted in the middle and which spread out laterally to form basal pale lateral spots, posterior border-bristles pale golden ; venter banded with dull white, black and ochreous scales, the latter apical, the black colour median.

Legs brown, base and under side of femora yellowish, knee spots dull white, the joints of the tibiae and tarsi with narrow yellow bands involving both sides of the joints.

Wings with a single row of small spatulate median vein-scales and some large narrowly pyriform lateral vein-scales ; costa spinose, fork-cells of nearly equal length, the first submarginal a little narrower than the second posterior, its stem

nearly as long as the cell, stem of the second posterior cell about two-thirds the length of the cell, the base of the second fork-cell



Fig. 226.  
Wing of *Mimomyia minuta*. ♂. Theobaid.

the nearer the base of the wing ; posterior cross-vein longer than the mid, rather more than its own length distant from it.

*Length*.—2·8 mm.

*Habitat*.—Calcutta ; Sylhet, Assam (Major Hall).

*Time of capture*.—30. vii. and 3. and 4. viii. 07 (N. Annandale) ; 27. xi. 04 (Major Hall).

*Observations*.—One ♀ and one ♂. The ♂ was described from Sylhet, Assam (Records Indian Museum, Vol. II., p. 301, 08). In the description of the proboscis it reads as if it were long and thin as in *Culex*. This is not so ; it is very swollen apically, almost club-shaped in some views, with a long thin stem. The unguis of the fore legs of the male seem to be simple and are unequal and curved ; the mid appear to be equal and simple and the hind ones very small.

The types have been returned to the Indian Museum, Calcutta, and without dissection the ♂ unguis cannot be made out.

#### **MIMOMYIA SPLENDENS. Theobald (1903).**

Mono. Culicid. III., 304 (1903) ; IV., 583 (1907).

Entebbe, Uganda ; Bahr-el-Jebel, Sudan.

Type in the British Museum.

#### **MIMOMYIA UNIFORMIS. Theobald (1905).**

First Rep. Gord. Coll. Well. Labs., 79 (1905) ; Mono. Culicid. IV., 581 (1907).

Lado, Enclave ; Bahr-el-Jebel, Sudan ; Congo Free State.

Type in the British Museum.

*MIMOMYIA CIRCUMTESTACEA.* Theobald (1908).

Third Rep. Well. Res., Labs., 264 (1908), Theobald.

Head dark brown; thorax dark brown in the middle, with a pale yellowish testaceous border surrounding it at the sides and front and to some extent behind. Abdomen brown, with traces of pale spots at the sides near base of segments, most prominent on basal segments. Legs brown. Fork-cells in female wings about same length and width, the stems not quite as long as the cells.

♀. Head deep brown, clothed with deep ochreous brown flat scales and some deep brown chaetae, the scales are ochreous in some lights, two long ones between the eyes; antennae pilose, very long and thin, deep brown, including the basal segment;



Fig. 227.  
*Mimomyia circumtestacea.* Theobald. ♀ head.

second segment of antennae very long as in *Deinocerites*; proboscis deep brown, hairy, darkest at the slightly swollen apex, not quite so long as the antennae; clypeus deep brown; palpi, very small, brown scaled, with traces of ochreous reflections towards the tips.

Thorax deep shiny brown in the middle, with a broad pale yellowish testaceous border around the sides and in front, with scattered small bronzy to brown scales on the dark area, pale ones on the light border; pale chaetae on the pale area, dark on the central area, particularly over the roots of the wings; prothoracic lobes pale; scutellum deep brown with narrow-curved small scales, five black chaetae to the mid lobe on the posterior border and dark ones on the lateral lobes; metanotum dark brown; pleurae same pale colour as the border of thorax.

Abdomen deep brown, with some pale dull creamy scales at the sides, forming more or less irregular basal patches most

of the second; stem of the first fork-cell about as long as the cell, of the second slightly shorter; posterior cross-vein rather



Fig. 220.  
*Mimomyia circumtestacea*. Theobald. ♂ head.

more than its own length distant from the mid. Claspers of genitalia not as long as the basal lobes, rather broad and with a small nearly terminal hook-like segment.

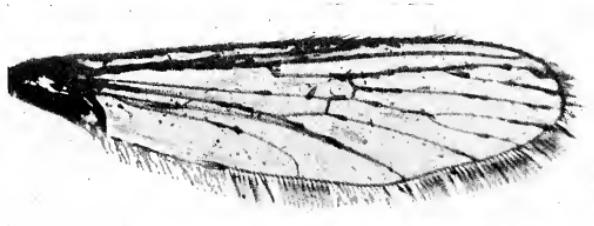


Fig. 230.  
Wing of *Mimomyia circumtestacea*. ♂. Theobald.

*Length*.—3 mm.

*Habitat*.—Sudan (H. King).

pronounced on the second and third segments; border-bristles and other hairs very fine, pale brown to golden brown.

Legs unbanded, clothed with brown scales, showing dull ochreous and bronzy reflections; unguis small, equal and simple; chaetae deep brown, rather thick.

Wings, with large scales on the apices of the veins; fork-cells moderately long; the first submarginal about the same length and width as the second posterior, its base very slightly nearer the apex of the wing than that of the latter; stem of the first fork-cell not quite as long as the cell; stem of the second fork-

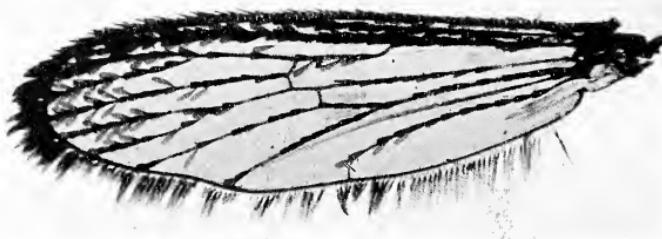


Fig. 228.  
Wing of *Mimomyia circumtestacea*. ♀. Theobald.

cell also not quite as long as the cell; supernumerary and posterior cross-veins very slightly longer than the mid cross-vein, the latter about one and a half times its own length distant from the mid; sixth long vein abruptly curved round to the border; halteres with pale stem and fuscous knob.

*Length*.—3 mm.

♂. Head brown, with brown flat scales, showing dull ochreous reflections and with dull yellowish upright forked scales behind. Antennae plumose, plume-hairs deep rich brown, basal segment black, internodes pale; proboscis deep brown, slightly ochreous at the base, labellae pale, much swollen along the apical two-thirds, hairy; palpi thin brown, about two-thirds the length of the proboscis.

Thorax as in ♀. Abdomen with the basal lateral spots more pronounced than in the ♀; pale ochreous ventrally and with pale hairs.

Legs uniformly brown with bronzy reflections; unguis simple, fore and mid nearly equal in size, but slightly different shape (?).

Wings with the fork-cells of about equal length and width, the base of the first nearer the apex of the wing than the base

*Observations.*—Described from two males and two females caught by Mr. King. It resembles to some extent *M. uniformis*, Theob., but can at once be told by the pale area around the central dark area of the thorax and by the wing venation.

The long second segment of the female antennae I did not notice in *uniformis*, but if it occurs it forms a marked generic character.

*Type* in the British Museum.

**MIMOMYIA MALFEYTI.** Newstead (1907).

Anns. Trop. Med. and Parasit. I., No. 1, 29 (1907).

"Head dark brown, with pale ochreous scales. Thorax dark brown, with bright blue reflections and clothed with long backward-curved bristles; pleurae pale ochreous. Abdomen

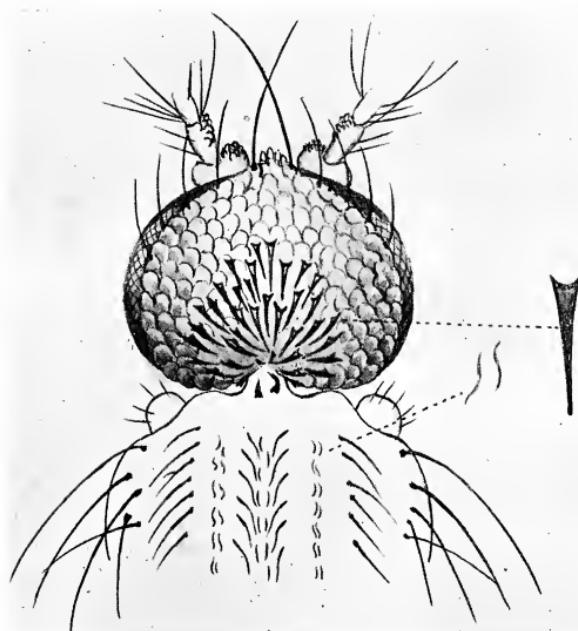


Fig. 231.

*Mimomyia malfeyti*. ♀. Newstead. Head (after Newstead).

brown; apical segment paler; venter ochreous. Legs dark brown, with pale ochreous femora. Wings with a pale spot at the base.

♀. Head brown, covered with rather loose, flat, creamy-coloured scales and a natal group of black, upright forked ones.

Antennae deep brown ; basal segment paler. Proboscis swollen apically, but much less so than in the ♂, dark brown ; labella dull ochreous.

Thorax dark brown, shining, with *blue reflections in certain lights*, but this character is much less evident under the microscope than under a pocket lens ; hairs dense and long, especially at the sides above the pleurae ; there are also one dorsal and two more or less distinct sub-dorsal rows of shorter hairs, between which is a double series of *minute*, narrow-curved, ochreous scales, which are very difficult to see and *are often wanting* ; scutellum with four or five narrow-curved, almost hair-like, black scales often wanting ; metanotum pale brown, *nude*.



Fig. 232.  
*Mimomyia malfeysi*. ♂. Newstead.  
Tibial spines. × 75 (after Newstead).

Wings with brown scales, and a basal, pale, nude patch ; median vein-scales in *a double row* on the subcostal and first long vein for two-thirds of the basal portion ; in single rows on the remaining veins ; outstanding scales present on all but the sixth vein, but are most numerous on the apical half of the wing ; first sub-marginal and second posterior-cells about equal in length, the former slightly the narrower ; posterior cross-vein a little more than its own length distant from the mid cross-vein. Halteres creamy ; knobs clothed with flat brown scales.

Abdomen unbanded, pale brown or ochreous, with somewhat scattered flat brown scales which give it a more or less mottled

appearance ; apical segment paler ; venter ochreous, with four or five dark marginal triangular spots.

Legs uniformly brown with pale reflections, except the under side and basal half of the femora, which are pale ochreous ; all the articulations are pale.

*Length*.—2·50 mm.

♂. Head with dusky ochreous scales. Thorax as in the ♀ ; metanotum darker. Antennae densely plumose, dusky brown ; basal segment paler. Proboscis much swollen from beyond the middle apically ; clothed with dusky ochreous scales ; labella slightly darker. Palpi long, thin, apparently of three equal segments, tip reaching just beyond the base of the swollen portion of the proboscis. Abdomen as in the ♀, but if anything more distinctly mottled. Anterior tibiae with a long, outer, simple spine and an inner, tridentate, falcate spine. Genital armature with basal segment stout ; arising from its inner surface at the base are four long spinose hairs ; second segment about equal in length to the first ; terminal claw short ; harpes relatively short, with one long and two minute spines.

*Length*.—2 to 2·5 mm.

*Habitat*.—Boma, Congo Free State."

*Type* in the School of Tropical Medicine, Liverpool.

#### MIMOMYIA AFRICANA. Newstead (1907).

Anns. Trop. Med. and Parasit. I., No. 1, 29 (1907), Newstead.

"Uniformly dark brown ; legs paler.

♀. Head very dark brown, completely covered with flat paler brown scales, no upright forked ones visible ; antennae dusky ochreous, basal segment darker and not scaled. Palpi very short, clothed with very dark brown scales. Proboscis (imperfect) dark brown. Thorax very dark brown, slightly shiny, with numerous long bristles and minute narrow-curved scales of the same colour as the cuticle ; scutellum with a few narrow-curved scales ; pleurae with a dark brown central area

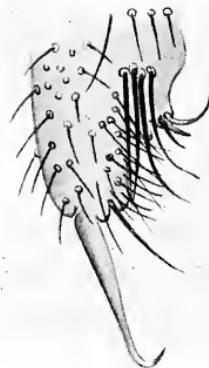


Fig. 233.

Male genitalia of *Mimomyia malfeyti*. Newstead.

covered with creamy-white scales; metanotum nude. Legs uniformly dark brown, with paler coppery reflections, nodes pale brown. Wings with all the veins clothed with brown scales; fringe paler; first sub-marginal cell narrower than the second

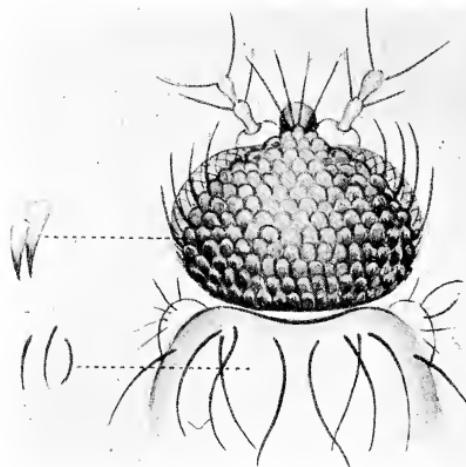


Fig. 234.  
Head of *Mimomyia africana*. ♀ (after Newstead).

posterior cell; posterior cross-vein about its own length distant from the mid cross-vein.

*Length* about 3.50 mm.

Described from a single female which, unfortunately, has the abdomen and tip of the proboscis imperfect. It can be recognised from any other known species by its uniform dark brown colour.

*Habitat*.—Nouvelle Anvers, Congo Free State, August 14th, 1904."

*Type* in the School of Tropical Medicine, Liverpool.

**MIMOMYIA MASHONAENSIS.** Theobald (1901).

*Uranotaenia mashonaensis.* Theobald (1901).

*Mono. Culicid. II.*, 259 (1901),

Salisbury, Mashonaland.

*Type* in the British Museum.

GENUS **FICALBIA**. Theobald (1903).

Mono. Culicid. III., 296 (1903) : IV., 577 (1907).

Four species have been described in this genus. They tabulate as below :—

## A. Abdomen banded.

- |                     |                             |
|---------------------|-----------------------------|
| Legs unbanded ..... | <i>nigripes</i> . Theobald. |
| Legs banded .....   | <i>minima</i> . Theobald.   |

## AA. Abdomen unbanded.

- |  |                             |
|--|-----------------------------|
| Thorax and abdomen deep brown; pleurae<br>bright ochreous..... | <i>simplex</i> . Theobald.  |
| Thorax and abdomen deep brown; pleurae<br>pale brown .....     | <i>inornata</i> . Theobald. |

**FICALBIA NIGRIPES**. Theobald (1905).

Ann. and Mag. Nat. Hist. Se. 7, XV., 199 (1905); Mono. Culicid.  
IV., 578 (1907).

Kortright, Freetown, Sierra Leone.

*Type* in the British Museum.

**FICALBIA MINIMA**. Theobald (1901).

*Uranotaenia minima*. Theobald (1901).

Mono. Culicid. II., 262 (1901); III., 297 (1901).

Quilon, Travancore, S. India.

*Type* in the British Museum.

**FICALBIA SIMPLEX**. Theobald (1903).

Mono. Culicid. III., 297, ♂ (1903), Theobald.

The male only has so far been described from Ceylon, two ♀'s evidently of this species have recently been received from that Island through Mr. E. E. Green.

Head, thorax and abdomen dark brown; pleurae bright ochraceous; metanotum dark in middle, pale ochreous around; abdomen ochraceous below. Legs unbanded.

♀. Head clothed with flat dark scales, a few shining paler ones around the eyes and a few short black chaetae projecting inwards along the eye border; clypeus chocolate brown; palpi small, black scaled; proboscis deep blackish brown; antennae brown, basal segment reddish brown.

Thorax deep brown with narrow-curved bronzy brown scales and numerous long dark chaetae, particularly dense over the roots of the wings; scutellum pale with small flat dark scales and black border-bristles, the lateral scales forming distinct tufts; metanotum brown in the middle, ochreous at the sides; pleurae bright ochreous with a patch of flat almost transparent ochreous scales.

Abdomen deep brown unbanded, the sides having an ochreous sheen in certain lights; border-bristles golden; venter ochraceous.

Legs bright ochreous at their bases, but from the femora to the tarsi almost black.

Wings with brown scales; fork-cells rather short, first fork-cell longer but scarcely narrower than the second, its base slightly nearer the apex of the wing, its stem about two-thirds

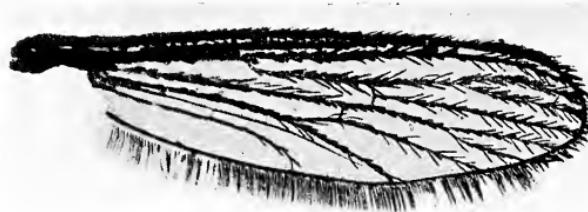


Fig. 235.  
Wing of *Ficalbia simplex*. ♀. Theobald.

the length of the cell, stem of the second posterior nearly as long as the cell; posterior cross-vein longer than the mid, not quite twice its own length distant from it.

*Length*.—3 mm.

*Habitat*.—Trincomalee, Ceylon (Green).

*Time of capture*.—xi. 1906.

*Observations*.—Described from two ♀'s. They are undoubtedly those of the *Ficalbia simplex* which I described from Ceylon.

*Types* in the British Museum.

#### **FICALBIA INORNATA.** Theobald (1908).

Entomologist, XLI., 108 (1908), Theobald.

Thorax and abdomen uniform deep brown; proboscis moderately long, deep brown; pleurae pale brown. Legs uniform brown. The whole insect with bronzy reflections in bright light.

♀. Head brown, with dull flat scales and paler upright forked scales; clypeus pale; proboscis uniform in colour, brown in some lights, violet in others, swollen apically where it is testaceous; antennae brown; basal segment pale.

Thorax deep brown, with traces of a paler line in the middle and in front at the edges, clothed with scanty narrow-curved bronzy scales and long black backwardly-projecting chaetae, especially posteriorly and over the roots of the wings; pleurae pale brown with some grey reflections; scutellum with small flat brown scales showing violet reflections, forming a large mass on the mid lobe, small areas on the lateral lobes, mid lobe with two long median border-bristles, then two shorter ones and a few still smaller; metanotum nude, deep brown. Abdomen brown, unbanded, with metallic violet and traces of green reflections; pale ventrally.

Legs uniform brown, with bronzy and violet metallic reflections, paler basally; unguis small, equal and simple; wings with typical brown Ficalbian scales, a somewhat dense patch of them above the cross-veins; outer costal border spinose and dark; sub-costal vein-scales dark, also the single-rowed median vein-scales, lateral ones pale; fork-cells of nearly equal length, the first sub-marginal slightly the narrower, its base slightly nearer the apex of the wing, its stem not quite twice the length of the cell; stem of the second posterior cell about one and a third the length of the cell; posterior cross-vein wider than the mid, a little more than its own length distant from it; halteres with pale stem and fuscous knob. Length 3 mm.

♂. Head with flat, rather loose violet-brown scales, some showing an ochreous tinge; upright forked-scales dark, showing ochreous reflections in some lights, especially behind; apparently a single large curved median black chaeta projecting forwards between the eyes; antennae plumose, dark brown, basal segment pale; palpi very short; proboscis dark.

Thorax as in female, but two median bare lines, very distinct. Abdomen as in female, but with traces of indistinct pale basal lateral spots on the three more basal segments. Fore and mid unguis unequal and simple; hind equal and simple.

Wings very similar to the female, but the fork-cells relatively shorter. Length 3 mm.

*Habitat*.—Transvaal (Mr. Simpson).

*Observations*.—Described from a perfect female and two males. The only other African member of this genus known is

*F. nigripes*, Theobald, from Sierra Leone (Mono. Culicid. vol. iv. p. 578, 1906), which differs from the Transvaal species in having a banded abdomen, the basal white bands being very prominent in the Sierra Leone insect. The female wing-scales agree with those of the male in this genus, and the discovery of the female does not necessitate adding anything to the definition of the genus.

*Types* in the British Museum.

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### GENUS **HODGESIA.** Theobald (1904).

Journ. Trop. Med. (Jan. 15th, 1904); Mono. Culicid. IV., 579 (1907).

Two species have been so far found in this genus. They can be separated by the following characters :—

Feet normal .....	<i>sanguinae.</i> Theobald.
Fore and mid feet bent, with a dense long tuft of scales projecting on last tarsal from the third; hind legs normal .....	<i>cuptopous.</i> n. sp.

### **HODGESIA SANGUINAE.** Theobald (1904).

*Hodgesia sanguinea.* Banks (1906).

Journ. Trop. Med. VII., 17 (1904), Theobald; Philip. Journ. Sci. I., 9, 981 (1906), Banks; Mono. Culicid. IV., 579 (1907), Theobald; Journ. Trop. Med., 368 (Dec. 1st, 1904), Giles.

Entebbe, Uganda.

*Type* in the British Museum.

*Note.*—Giles records this (with a query in the Jour. Trop. Med.) from Pampanga, Camp Stotsenberg, Angeles, P. I. (E. R. Whitmore). I do not imagine it has anything to do with the African species described from Entebbe, Uganda. His note is recorded here as follows :—

“ The specimens referred to undoubtedly belong to Mr. Theobald’s new genus described in the issue of January 15th, 1904, of this Journal, but unfortunately have fallen a victim to a small mite which was enclosed in the tube with the specimens, and which has eaten off most of the scales. From what remains of the decorations the specimens may very well be identical with his *Hodgesia sanguinea*, as the highly characteristic wing-scales are quite intact and are unmistakable, while some few of the remaining occipital scales also correspond with his figure.

A point in the leptolaxis of the wing which he has not noticed is

that the costa is armed with peculiar thorn-like scales absolutely identical with those of *Stegomyia brevipalpis*, figured on Plate XIV., fig. 18, in my Handbook; and as far as the remaining decoration goes, the present specimens would correspond equally well to that species as to *H. sanguinae*. But the scales of the wing-field in *C. brevipalpis* do not correspond in form with those of *Hodgesia*, so that there can be no question as to their distinctness, though there are many points of resemblance of scale structure between the two species, as Mr. Theobald is wrong in stating that *C. brevipalpis* is 'typical *Culex*', as in the female at least, although the forked scales spread much further forward than is usual in *Stegomyia*, the middle of the occiput is clothed with flat white scales, the ends of which are rounded, much as in *Hodgesia*, and it is needless to say that no such flat scales are to be found in that region in typical *Culex*. With the view to facilitate the recognition of this peculiar little mosquito, I append a drawing of its venation."

#### HODGESIA CUPTOPOUS. nov. sp.

Shiny metallic black, a pale spot on the head, blue to mauve; a silvery-white spot formed by the white scaled prothoracic lobes on each side; pleurae silvery-white. Abdomen dark blackish-brown above, silvery-white at the sides and below. Legs brown, the fore and mid last tarsals bent and overlapped by a long tuft of scales above.

♀. Head covered with small flat black scales with a patch of pale ones in the middle, mauve in some lights, blue in others; chaetae black; proboscis deep brown, swollen apically; palpi very minute, dark brown; antennae with rather long hairs, brown, basal segment globular, brown.

Thorax shiny black, clothed with narrow-curved bronzy black scales; prothoracic lobes with flat silvery-white scales; pleurae dark with dense flat silvery-white scales; scutellum shiny black (denuded), long black chaetae over the wings; metanotum black.

Abdomen flattened laterally, expanded apically, dusky  
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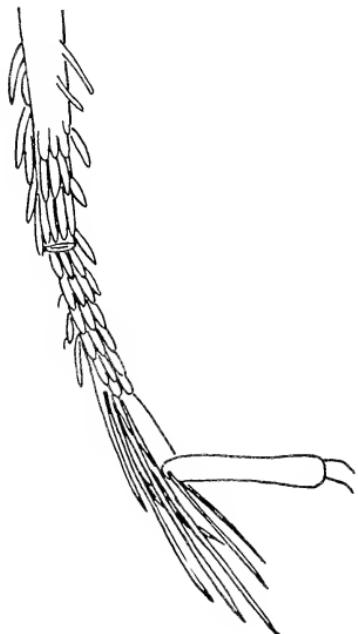


Fig. 236.  
*Hodgesia cuptopous*. ♀. n. sp.  
Tarsal structure.

brownish-black with silvery lateral scales (creamy in some lights) and silvery venter.

Legs dark brown, the apical segment of the fore and mid tarsi bent, a dense tuft of long dark scales projecting over the last tarsal from the third; hind legs normal; unguis all equal and simple.

Wings with the first fork-cell longer and about the same breadth as the second, its stem nearly as long as the cell; stem of the second fork-cell as long as the cell; bases of the two cells about level; posterior cross-vein about one and a half times its own length distant from the mid; second long vein carried just past the supernumerary, with one or two scales; lateral vein scales long, thin, and forked at their apices, a double row of



Fig. 237.  
Wing of *Hodgesia cuptopous*. ♀. n. sp.

spatulate median vein scales on the first long vein and on the outer branch of the second; a distinct fold between the fifth and sixth long veins; outer costal border densely spinose.

*Length*.—2 mm.

*Time of capture*.—12. vii. 07.

*Habitat*.—Obuasi, Ashanti (Dr. Graham).

*Observations*.—Described from a single ♀ taken in a house. In spite of the very marked feet, I have placed it in the genus *Hodgesia*, Theobald, as the wing scales, &c., exactly answer to those in it. It comes very near *Hodgesia sanguinae*, but can be told by the coloured patch on the head and the stem of the first fork-cell being nearly as long as the cell, as well as the very marked scale structure on the feet.

*Type* in the British Museum.

## GENUS HARPAGOMYIA. Meijere (1909).

Tijdsch. v. Entomol. LII., 165 (1909).

Head clothed with large flat scales; proboscis short, thick, swollen apically, elbowed just below the enlarged apical area, clothed with very long hairs along its whole length with two

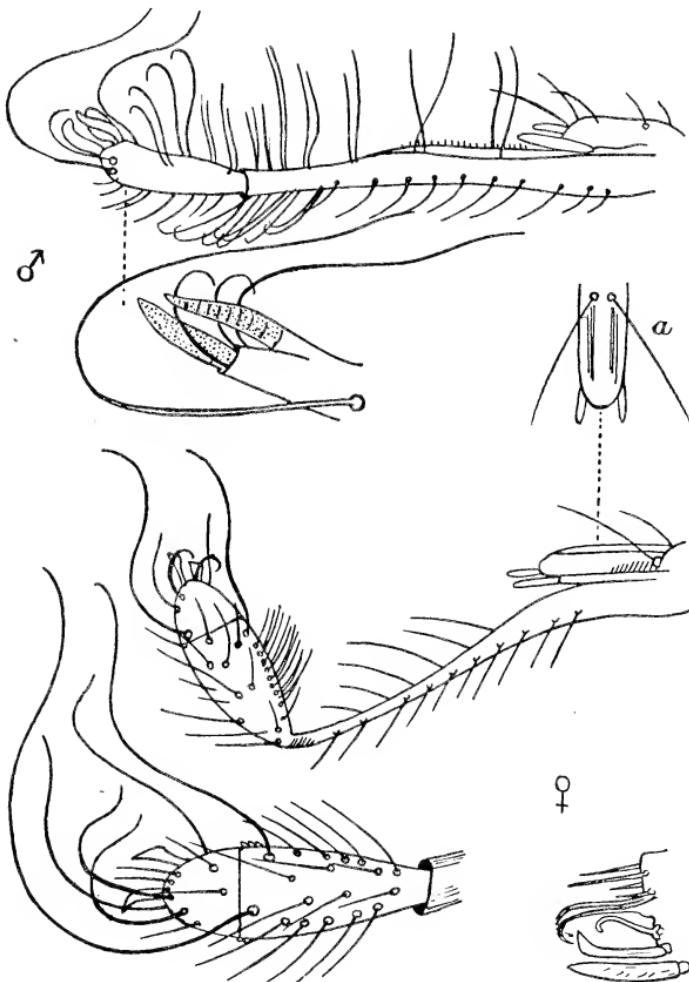


Fig. 238.

*Harpagomyia trichorostris.* n. sp.

♂ and ♀ proboscis and ♀ clypeus and palpi.

very long ones at the base of the labellae, and two a little shorter; in the female the proboscis is more swollen than in the ♂, and there is a denser tuft of hairs on the swollen area; at the apex in both sexes are two hook-like short hairs and a

complex structure, shown in figure ; palpi of ♀ and ♂ very short and thin, almost thread-like, hidden beneath the elongated clypeus. Antennae of ♂ and ♀ much alike. Thorax clothed with narrow-curved scales, and with a median line of broad flat scales in front, similar scales clothe the prothoracic lobes and occur just over them in a patch ; these scales are of very marked form, being almost round. Scutellum clothed with short, broad, flat scales ; metanotum nude. Wings with scanty scales, moderately long and rather broad. The male antennae are verticillate, like the ♀. The genitalia seem normal, a long small clasper to each lobe.

This forms a very distinct genus, which can at once be told by (1) the squamose characters, (2) the quaint proboscis, and (3) the elongated clypeus, which covers a greater part of the palpi. There is a curious complex structure at the apex of the proboscis in both sexes, which I have drawn as far as one can from the actual type specimens. Proper microscopic preparations alone can show the exact structure.

I described this genus under the name *Grahamia*,\* but Meijere's name has priority. Meijere's species comes from Batavia and Semarang. Banks showed me a similar insect from the Philippines. They are *Myrmecophilous*-insects. There is no doubt that the African species described here comes in this genus.

#### HARPAGOMYIA TRICHOOSTRIS. nov. sp.

Head metallic, pale pink and silvery ; proboscis, etc., brown ; thorax deep blackish-brown with a broad median metallic mauve line in front ; prothoracic lobes metallic white with mauve and rose reflections ; silvery pleural patches ; scutellum silvery. Abdomen smoky black with large apical silvery lateral patches. Legs brown, unbanded.

♀. Head clothed with flat scales, brown at the base, metallic pink, mauve and silvery white in front, forming a large patch passing between the eyes, flat white scales at the sides ; clypeus brown, elongated ; palpi brown, short and thin, just projecting beyond the clypeus ; two chaetae arising from the base of the clypeus, one on each side ; proboscis brown, with long hairs along its whole length, the apical third swollen and elbowed

\* Descriptions of New Mosquitoes Collected by Dr. Graham in Ashanti. Colonial Office Report, Miscellaneous, No. 237, 23 May, 1909.

See note, p. 497.

where the swelling arises, two very long hairs near the apex and two slightly shorter, two curved hook-like hairs at extreme tip and two small flat processes, projecting forwards from beneath the apex ; antennae dark brown.

Thorax black, with narrow-curved dark bronzy scales, a median line of metallic mauve in front composed of two rows of flat roundish scales ; prothoracic lobes clothed with mauve flat scales and a small area of similar roundish flat scales on the sides above them ; scutellum pale brown with dense flat roundish silvery and pale ochreous grey scales, the latter towards the base ; four border-bristles to the mid lobe, two directed posteriorly and two laterally ; three chaetae only to the lateral lobes ; metanotum shiny black ; pleurae brown with patches of silvery white scales, appearing grey in some lights.

Abdomen black, unbanded ; the second, fourth, fifth, sixth, and seventh segments with large apical silvery-white patches, no trace of one on the third segment ; border-bristles dark ; venter dark with scattered pale yellow scales.

Legs dark brown, with dull bronzy reflections, long, the apices



Fig. 239.  
Proboscis of *Harpagomyia trichorostris*.  
♀. n. sp.

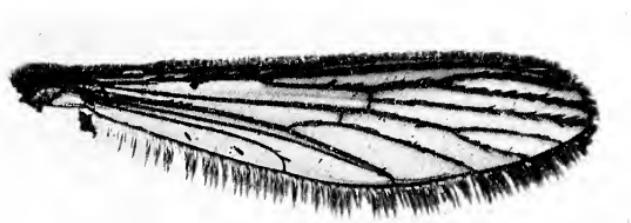


Fig. 240.  
Wing of *Harpagomyia trichorostris*. ♀. n. sp.

of the femora and tibiae rather swollen ; under side of femora slightly paler ; unguis all equal and simple.

Wings with the first sub-marginal cell longer and narrower

than the second posterior cell, its base nearer the base of the wing, its stem a little more than half the length of the cell; stem of the second posterior slightly longer than the cell; posterior cross-vein about its own length distant from the mid. Halteres dark brown.

*Length.*—2 to 2·5 mm.

♂. Two long nearly parallel black chaetae project forward between the eyes. Antennae verticillate, very like the ♀.

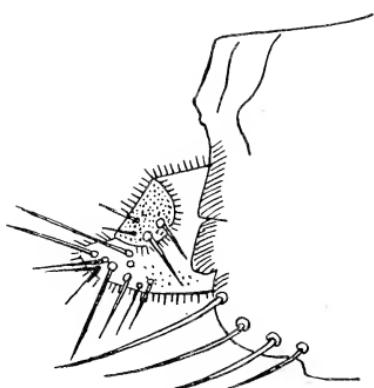


Fig. 241.

*Harpagomyia trichorostris.* ♀. n. sp.  
Apex of abdomen.

Clypeus similarly elongated and the short palpi thin; the proboscis rather shorter, the swollen end more pronounced, with pale scales at its base, a great number of hairs just below it on one side all markedly curved at their apices; at the apex is a complicated apparatus, composed of two semi-transparent broad acuminate lamellae above, two distinct short fish-hook shaped hairs, a brown acuminate lamella below and similar long hairs as in the ♀.

Thorax and abdomen as in the ♀.

The male genitalia seem quite normal, with long simple claspers. Wing venation very similar to the female, but the fork-cells of more equal length. Fore and mid unguis small, unequal, but simple, hind very small, equal and simple.

*Length.*—3 mm.

*Habitat.*—Obuasi, Ashanti (Dr. Graham).

*Time of capture.*—27. vi. 07, and 29. ix. 07.

*Observations.*—Described from two ♀'s and one ♂. They were caught in the bush. The species can at once be told by the brilliant line on the mesonotum and the marked abdominal ornamentation, there being no trace of silvery spots on the third segment.

*Types* in the British Museum.

#### HARPAGOMYIA SPLENDENS. Meijere (1909).

Tijdsch. v. Entom. LII., 167 (1909).

Batavia in February and August and Semarang in March.

The thorax is shiny dark brown with a mid line of silvery

scales, a silvery spot on each side and silvery prothoracic lobes ; scutellum silvery. Abdomen dark brown, marked with silver ; venter yellow.

Length.—2 mm.

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GENUS **PSEUDOGRAHAMIA**. Theobald (1910).

Records Indian Museum IV. 26 (1910).

Head clothed with flat scales ; proboscis more than half the length of the body, curved upwards, slightly swollen at the apex ; palpi of the ♀ very small and densely scaly. Thorax densely clothed with large narrow-curved scales, closely appressed and with a median line of *flat* metallic scales, and a patch of flat scales on each side in front ; scutellum clothed with flat scales, large and rounded apically, metanotum apparently nude. Apex of hind tibiae and base of metatarsi with rather dense short outstanding scales. First fork-cell slightly expanded basally and the veins densely scaled apically, considerably larger than the second posterior cell.

A very marked genus, coming near *Harpagomyia*, but at once distinguished from it by the normal form of the proboscis.

**PSEUDOGRAHAMIA AUREOVENTER**. Theobald (1910).

Records Indian Museum, IV. 27 (1910).

Head black, with a central silvery-white spot ; proboscis and antennae deep brown ; palpi pale creamy, very small. Thorax black with a broad silvery-white line in front, silvery-white prothoracic lobes and a creamy patch in front at the sides. Abdomen black with large basal triangular creamy lateral patches which extend upwards almost to form narrow dorsal bands ; venter pale dull golden. Legs deep black.

♀. Head covered with flat closely appressed blackish-brown scales with a large median triangular silvery-white area with two long black straight chaetae projecting forwards between the eyes, a few small black ones curved inwards on each side and a large black one laterally, along the ocellar rim ; proboscis deep black, curved upwards, slightly swollen apically ; palpi very small, densely clothed with creamy scales ; antennae deep brown ; clypeus bright rich brown.

Thorax deep rich brown, densely clothed with long narrow-

curved closely appressed deep blackish-brown scales, a median line in front of flat scales, semi-transparent, with white and pale mauve and silvery reflections, a large area of flat dull creamy to ochreous scales on each side in front reaching up to the base of the wings; prothoracic lobes with flat silvery-white scales with pale blue reflections in certain lights; scutellum clothed with large flat silvery-white scales, some appearing dusky on the lateral lobes; metanotum deep brown; pleurae brown with flat creamy scales.

Abdomen flattened laterally with large basal silvery white lateral patches, extending upwards to the dorsum as narrow areas; base and venter of the abdomen pale dull golden, with metallic sheen.

Legs deep blackish-brown; coxae pale ochreous with white scales; femora pale ochreous below; tibiae with the scales expanded apically and with some incurved chaetae; base of metatarsi with the scales slightly projecting, particularly on the hind legs; unguis equal and simple.

Wings with moderately long fork-cells; the first submarginal much longer and about the same width as the second fork-cell, its base much nearer the base of the wing than that of the latter, its stem half the length of the cell; the cell somewhat expanded basally and each branch densely scaled apically, stem of the second fork-cell longer than the cell; supernumerary cross-vein longer than the mid, the mid the same length as the posterior, the latter about its own length distant from the mid.

Halteres with long stem, base ochreous, apex and knob fuscous.

*Length.*—4·8 mm.

*Habitat.*—Palode, 20 miles N.E. of Trivandrum, Travancore.

*Time of capture.*—16. xi. 08.

*Observations.*—Described from a single ♀. A very marked and beautiful species which cannot be confused with any other *Culicid*.

*Type* in the British Museum.

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SUB-FAMILY **DEINOCERATINAE.** MITCHELL.

(Second segment of antennae very long; palpi short in both sexes.)

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Two genera occur here:—

1. *Deinocerites.* Theobald (1901).
2. *Dinomimetes.* Knab (1907.)

Both live in crab-holes.

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**GENUS DEINOCERITES.** Theobald (1901).

BRACHIOMYIA. Theobald (1901).

Mono. Culicid. II., 215 (1901); III., 275 (1903), Theobald.

## DEINOCERITES CANCER. Theobald (1901).

*Brachiomyia magna.* Theobald (1901).

Mono. Culicid. II., 215 (1901), and 344, II. (1901); III., 276 (1903).

Jamaica, St. Lucia, St. Vincent, Barbados, British Guiana.  
*Types* in the British Museum.

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**GENUS DINOMIMETES.** Knab (1907).

Journ. N. York Ent. Soc. XV., 120 (1907).

“Eyes contiguous; clypeus without bristles; antennae very long, filiform, ciliate, whorls inconspicuous, the second segment over fourteen times as long as wide in both sexes; metanotum with setae. Prothoracic lobes well separated.”

**DINOMIMETES EPITEDEUS.** Knab (1907).

Journ. N. York Ent. Soc. XV., 120 (1907).

Port Limon, Costa Rica.

*Type* in the U.S. National Museum.Lives in crab-holes and has deceptive resemblance to *D. cancer*.

**ORTHORHYNCHAE.****METANOTOTRICHAE.**

(Metanotum ornate, with chaetae or squamae.)

*See p. 112.***METANOTOTRICHAE—HETEROPALPAE.**

(Palpi long in ♂; short in ♀.)

*See p. 574.***SUB-FAMILY TRICHOPOROSOPONINAE.****THEOBALD.**

(Hyloconopinae, Lutz; Joblotinae, Blanchard.)

The following genera occur in this sub-family:—

- A. Palpi of ♀ scarcely  $\frac{1}{3}$  length of proboscis; of ♂ nearly same length.
- α. A conical blunt prominence between eyes and clypeus ..... *Runchomyia*. Theobald.
  - αα. Conical prominence absent.
    - β. Clypeus with hairs ..... *Trichoprosopon*. Theobald.  
Proboscis long and thin ..... *Joblotia*. Blanchard-Lutz.
    - ββ. Clypeus without hairs.
    - γ. Scutellum with all flat scales.  
Proboscis not exceeding length of abdomen, apex swollen ..... *Hyloconops*. Lutz.
    - Proboscis short and thick, apically expanded, not as long as whole body ..... *Goeldia*. Theobald.
    - γγ. Scutellum with flat scales mid lobe; narrow-curved ones lateral lobes ..... *Eretmapodites*. Theobald.

GENUS **RUNCHOMYIA.** Theobald (1903).

BINOTIA. Blanchard (1904).

Mono. Culicid. III., 319 (1903), Theobald; Les Moust., 427 (1905); Archives de Parasitologie VIII., 478 (1904), Blanchard.

Blanchard renamed this genus on account of Robineau-Desvoidy's genus, *Rhynchomyia* (1830). The names are not the same, so the above generic name stands.

Two species occur in this genus as follows:—

Proboscis as long as the body.

- Mesonotum very dark, almost black;  
abdomen and legs unbandied ..... *frontosa*. Theobald.  
Mesonotum with a central longitudinal  
yellow line; abdomen dark chestnut-  
brown ..... *lineata*. Lutz.

## RUNCHOMYIA FRONTOSA. Theobald (1903).

*Binotia frontosa*. Theobald—Blanchard.

Mono. Culicid. III., 319 (1903).

British Guiana.

Type in the British Museum.

## RUNCHOMYIA LINEATA. Lutz (in Peryassu) (1908).

Os Culicideos do Brazil, 266 (1908).

Mesonotum with a central longitudinal yellow line. Abdomen  
chestnut-brown.

Brazil.

## RUNCHOMYIA (?) PHILIPPINENSIS. Giles (1904).

Journal of Tropical Medicine VII., 368 (Dec. 1st 1904), Giles; Philip.  
Journ. Sci. I., 9, 991 (1906), Banks.

"Wing unspotted. Tarsi uniformly deep brown. Thorax dark brown, much denuded, but evidently with patches of large flat scales as in *Uranotaenia*. Abdomen dark brown, with a row of pale scales, very distinct laterally on the hinder border of the segments. Venter with very brilliant pale triangular patches. Frontal protuberance very large.

♀. Head dark, with three patches of flat pale violet scales on the occiput, and a large patch of dark erect forked scales behind. Frontal protuberance nude, pale ochraceous, melon-shaped, with a distinct

basal constriction or neck. Palpi short, three (?) jointed, clothed with brown scales and pale hairs. Proboscis very long. Antennae with nude, ochraceous basal joints. Mesonotum mostly denuded. The prothoracic lobes are developed into, or provided with, peculiar processes shaped like halteres and clothed with pale lilac scales. At the end of the club is a nude brown process shaped like a filbert nut. Veins of wings clothed with flat, broad, and long narrow scales : fork-cells rather short. There are numerous large pale-scaled patches on the pleura and coxae. Legs rather pale chocolate-brown throughout.

The species is rather above the medium size.

*Habitat*.—The Philippine Islands. Caught in the woods."

*Notes*.—I have appended Giles' original description. The type is in the British Museum, but I have not had leisure to examine it. It is certainly not a *Runchomyia*. Banks has put a note as follows: "This species is identical with *Uranotaenia nitidoventer*, Giles, but both are incorrectly placed as to genera."

Carter has examined the type and says: "Certainly does not belong to either *Runchomyia* or *Uranotaenia*. There are no scales on the metanotum, although Giles from his description seems to be fairly certain of their presence."

#### GENUS **TRICHOPROSOPON**. Theobald (1901).

##### **JOBLOTIA**. Blanchard (1901).

Mono. Culicid. II., 283 (1901); IV., 590 (1907).

Four species have been described in this genus, and I think a fifth should be included.

They tabulate as follows:—

All the feet white .....	<i>splendens</i> . Lutz.
Hind feet not white .....	<i>nivipes</i> . Theobald.
Same, but posterior half of abdomen laterally expanded, base contracted ...	<i>compressum</i> . Lutz.
Legs without white .....	<i>lunata</i> . Theobald.

#### **TRICHOPROSOPON SPLENDENS**. Lutz (in Peryassu) (1908).

Culicideos do Brazil, 270 (1908), Peryassu.

Brazil.

TRICHOPROSOPON NIVIPES. Theobald (1901).

*Joblotia nivipes.* Blanchard—Theobald.

Mono. Culicid. II., 285 (1901); III., 534 (1903); IV., 593 (1907);  
Culicideos do Brazil, 271 (1908), Peryassu.

Brazil, Mexico, Trinidad, Costa Rica, and Salvador.

Prof. Goeldi has described and figured the larvae from Brazil. He found them in the water in the leaves of bromelias, in the axils of banana leaves and in holes in fallen trees. The species is distributed throughout the moist tropics. Mr. Busck collected larvae in Trinidad from cacao husks, and Mr. Knab found them in cocoanut shells and cacao husks at Puntarenas, Costa Rica, and Sonsonate and Izalco, Salvador. The water in which they occur is very dirty, of a thick consistency. The eggs are laid in rafts, erect as in *Culex*, but of circular outline, not elliptical.

*Type* in the British Museum.

TRICHOPROSOPON COMPRESSUM. Lutz (in Theobald) (1907).

Mono. Culicid. IV., 590 (1907), Theobald; Culicideos do Brazil,  
274 (1908), Peryassu.

Brazil.

TRICHOPROSOPON LUNATA. Theobald (1901).

*Joblotia lunata.* Theobald (1901).

*Wyeomyia lunata.* Theobald (1901).

*Lesticocampa lunata.* Dyar and Knab.

Mono. Culicid. II., 279 (1901); III., 336 (1903); IV., 594 (1907);  
Culicideos do Brazil, 276 (1908), Peryassu.

Brazil.

*Type* in the British Museum.

*Note.*—If Dyar and Knab are right in their identification, they place this in a new genus founded on larval characters. The larvae came from Trinidad.

*Note.*—The genus *Lesticocampa* founded by Dyar and Knab on purely larval characters, seems to me invalid; they founded it on the supposed larvae of *lunata*, Theobald, taken in bromelia water at Arima, Trinidad. A re-examination of this insect shows it has a hairy clypeus and comes well in *Trichoprosopon*.\*

\* Further notes are added in the Appendix on *Lesticocampa*.

**LESTICOCAMPA ? CULICIVORA.** Dyar and Knab (1907).

Journ. N. York Ent. Soc. XV., 207 (1907).

" ♀. Proboscis long and slender; palpi not as long as three joints of the antennae, slender, black; clypeus black, shining, nude; occiput clothed with flat deep blue scales, prothoracic lobes large, prominent, well separated, with a few silvery scales; mesothorax compressed, covered with steel blue scales; scutellum clothed with flat broad shining bright blue scales; metanotum deep brown, a group of setae towards the apex; abdomen long and slender, sub-cylindrical, the segments somewhat constricted beneath, above clothed with steel blue scales, beneath with yellowish silvery ones with an undulate lateral margin; wings long and narrow, hyaline, cross-veins nearly incident; legs long and slender, hind legs with outstanding scales on the apical portion of the tibiae and particularly on the second joint of the tarsi, forming a short lateral fringe; black with violet blue reflection, the tarsi of the middle legs with the apical half of the second and the succeeding segments silvery-white, of the hind legs with the last two joints white.

*Length*—5 mm.

One specimen, Tabernilla, Canal Zone, Panama (A. Busck), bred from larvae in flowers of *Heliconia*, associated with some unbred long tubed larvae, probably a species of *Culex*."

*Note.*—This may be a *Trichoprosopon*.—F. V. T.

### GENUS HYLOCONOPS. Lutz (1904).

Mosq. do Brazil, 49 and 55 (1904), Lutz; Mono. Culicid. IV., 586 (1907), Theobald.

Lutz describes two species in this genus:—

1. Abdomen metallic blue and dark violet  
with apical lateral white spots ..... ..... *pallidoventer*. Lutz.
2. Abdomen metallic purple and violet with  
golden apical lateral spots ..... ..... *longipalpis*. Lutz.

### HYLOCONOPS PALLIDOVENTER. Lutz (1904).

Mosq. do Brazil, 49 (1904), Lutz; Mono. Culicid. IV., 587 (1907), Theobald; Culicideos do Brazil, 267 (1908), Peryassu.

São Paulo, Brazil.

**HYLOCONOPS LONGIPALPIS.** Lutz (in Theobald) (1907).

Mono. Culicid. IV., 588 (1907), Theobald; Culicideos do Brazil, 269 (1908), Peryassu.

Brazil.

**GENUS ERETMAPODITES.** Theobald (1901).

Mono. Culicid. I., 280 (1901), Theobald.

Since the discovery by Newstead and Graham of fresh species in Africa, the characters of this genus must be slightly modified, and the presence of paddles on the hind feet of the male must be discarded, as Graham has found species in which they are simple. The flat scales of the head are rounded apically, and there is a small patch of narrow-curved scales and upright forked scales behind. The ♀ palpi are rather long, densely scaly and somewhat acuminate; the ♂ palpi long and acuminate with *no hair-tufts*. The mesothorax has narrow-curved scales, the scutellum flat scales on the mid-lobe, narrow curved ones on the lateral lobes; the prothoracic lobes in one group have flat scales, in another narrow-curved ones. The wing scales are very marked. Claspers of the ♂ genitalia long and curved with no terminal spine.

Seven species are known, all from tropical Africa.

They mostly frequent shady forest paths where there are trees overhead, and where the ground is not quite bare of vegetation. They are sometimes found, Dr. Graham says, perching on low bushes, but are usually nearer the ground.

In resting attitude they carry the third pair of legs curved forward over the thorax. Larvae were found in a hole full of a decoction of dead leaves in the root of a forest tree. Dr. Graham caught the adult females on the flowers of the wild pineapple. He never observed them to bite. Mr. Austen bred the original species of this genus from water in old tins and bottles.

The genus was placed in the *Culicinae* originally, but since Graham has observed chaetae and squamae on the metanotum it must go back to the *Metanotrichae-Heteropalpae*.

The species tabulate as below:

A. Prothoracic lobes with narrow curved scales.

  a. Hind tarsi of ♂ paddled, of ♀ normal.

    β. Head brilliant burnished silver and black.

    Thorax ferruginous with six golden scaled lines and five darker lines *quinquevittatus*. Theobald.

- BB.* Head in front with blue and white parti-coloured scales.  
 Thorax orange with black scales and 2 median and 2 curved lateral golden scaled lines ..... *oidipodeios*. Graham.
- aa.* Hind tarsi of ♂ and ♀ normal; last 2 hind segments of feet white ..... *leucopous*. Graham.
- B.* Prothoracic lobes covered with flat scales.  
*a.* Hind tarsi of ♂ paddled, venter of ♀ golden ..... *chrysogaster*. Graham.
- aa.* Hind tarsi of ♂ and ♀ normal; venter of ♀ black and white.  
 Head with brilliant silvery-white scales, patch of black in middle, thorax with 6 golden lines ..... *inornatus*. Newstead.
- Head with parti-coloured blue and white scales in front and sides and a triangular area of golden narrow-curved and black and golden upright forked scales behind ..... *melanopus*. Graham.
- Head silvery white scaled in front and sides, rest as above; ♂ clasper with terminal spine ..... *austenii*. n. sp.

**ERETMAPODITES QUINQUEVITTATUS.** Theobald (1901).

Mono. Culicid. I., 280 (1901).

Freetown, Sierra Leone; Old Calabar.

*Types* in the British Museum.

**ERETMAPODITES OIDIPODEIOS.** Graham (1909).

The Entomologist, XLII., p. 86 (1909).

"The head is covered in front with dense parti-coloured (blue and white) flat scales, which project between the eyes and clothe the sides of the head, and in a triangular area behind with golden, narrow-curved and black upright and golden forked scales. Six long dark bristles project forward between the eyes, and posterior to them are three lateral bristles on each side of the head.

Antennae plumose, the verticillate hairs pale brown. The two apical segments three times as long as the others.

Palpi thin, acuminate, black, without plumose hairs, shorter than proboscis.

Proboscis long, thin, blue-black, curved apically.

Clypeus dark brown, nude.

Thorax: the mesonotum is covered with narrow-curved scales. The ground colour is orange, covered in the greater part by

black scales. Two parallel narrow bands of golden scales run backwards for about three-fourths of the length of the mesonotum, enclosing between them a median black band of equal breadth. Behind, the black median band is continued to the scutellum by a short band of golden scales. Laterally there are two curved bands of golden scales, which reach the hind margin just external to the lateral lobes of the scutellum. An interrupted border of golden scales surrounds the mesonotum. Two tufts of long hairs project backwards above the wing-joints.

Scutellum: the central lobe is covered with blue and white

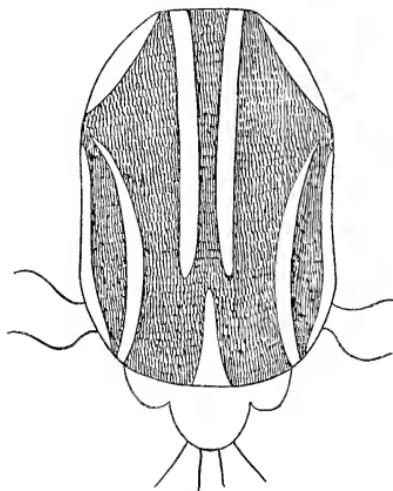


Fig. 242.  
*Eretmapodites oidiopodeios*. Graham.  
Mesonotum of ♀ (Graham).

parti-coloured flat scales, almost surrounded by purple flat scales, and on the edge are four long bristles and five smaller ones. The lateral lobes are covered with golden narrow-curved and black, narrow-curved scales, and show three long bristles and some shorter ones.

Pleuræ: the pleura is a pale golden colour, with two closely approximated spots of blue and white flat scales below the wing-joint, one on the mesopleura and one on the metapleura, with a third smaller spot lower down on the mesopleura. The prothoracic lobes are covered with narrow-curved golden and a few black scales. There are some bristles on the edge, and below on the expanded tip of the prosternum there is a patch of blue and white flat scales.

Halteres; base pale cream, part of the stalk and knob covered with blue-black scales.

Metanotum a dark golden colour, with five hairs and a few golden narrow-curved scales at the apex.

Abdomen a velvety black, with purple reflections, the venter banded with basal white bands, which become oblique laterally and become apical on the sixth segment. There is a dorsal white band on the seventh segment. The abdomen is compressed laterally and expanded posteriorly.



Fig. 243.

*Eretmapodites oidipodeios.*  
♂ hind tarsus (Graham).

cell is narrower and one-third of its length longer than the second posterior cell. The stem of the first submarginal more than half the length of the cell. The supernumerary and mid cross-veins are close together, and the posterior cross-vein about its own length nearer the base of the wing. The sixth vein turns at right angles to the costa just before its termination. There are a few blunt flat scales on the alulae.

Genitalia : the basal lobes are a long oval, with long curved claspers without terminal articulated spines, and covered on the basal half with flat scales, and on the distal half with some bristles. Very long golden stiff hairs clothe the basal lobes and project between them. I have not had material for a dissection.

*Length.*—4 mm.

♀. Head as in male. Antennae less plumose. Palpi rather

Legs a purple-black, with narrow apical pale bands on the femora of the third pair. The hind tarsi are of abnormal form and densely plumed. The fourth segment is at right angles to the third segment, and is curved. The fifth segment is as long as the fourth and nearly straight. Long pale brown hairs hang from the distal extremity of the third segment, and the fourth and fifth segments are feathered on both sides with long pale brown hairs, those on the fourth being almost at right angles to those on the fifth segment.

Ungues : I have not been able to spare a male for dissection.

Wings clothed along the costa with blue-black flat scales with a metallic lustre, and elsewhere with dark ribbed *Trichoprosopon*-like scales. The first submarginal

long, densely scaled, acuminate, black. Proboscis, thorax, metanotum, as in male.

Abdomen: The dorsum and sides are a velvety black, with large oblique lateral white bands, basal on the proximal segments and apical on the sixth segment. The venter is pale gold, with

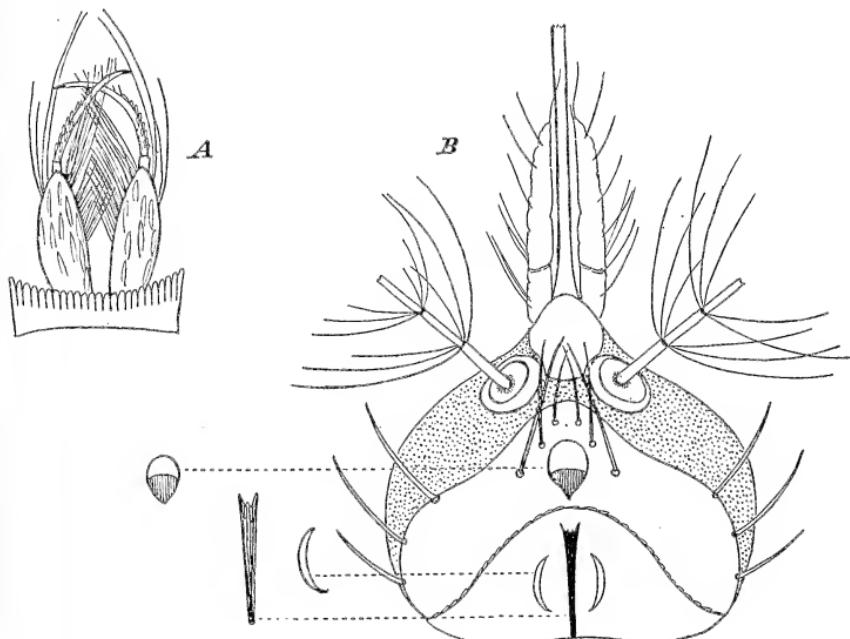


Fig. 244.

*Eretmapodites oidipodeios*. Graham.  
A, male genitalia; B, head ♀ (Graham).

apical black bands on the third, fourth, fifth, sixth and seventh segments.

Legs as in male, but the pale band on the hind femora is white. The hind tarsi are of normal form.

Wings as in male. First submarginal one-third longer than second posterior, and stem of first submarginal half the length of the cell. Cross-veins as in male.

Length.—5 mm.

Habitat.—Obuasi, Ashanti, in bush-paths, 2 P.M. to 5 P.M. in August, October and November."

Types placed by Dr. Graham in the British Museum.

ERETMAPODITES LEUCOPOUS. Graham (1909).

The Entomologist, XLII., p. 88 (1909).

"♂. Head as in *oidipodeios*, but the scales are less blue. Antennae, palpi, proboscis, clypeus ; as in *oidipodeios*. Thorax : very similar to that of the former.

Prothoracic lobes, pleurae, halteres, scutellum, metanotum as in *oidipodeios*.

Abdomen very similar to that of *oidipodeios*. A velvety black, with broad bands of white basal banding on the venter ; these bands become oblique laterally, and apical on the sixth segment and dorsal on the seventh segment, but do not meet in the middle line dorsally. There are golden ventral spots on the sixth and seventh segments. Abdomen is compressed laterally and flattened and expanded towards the extremity.

Legs as in *oidipodeios*, but the two last segments of the tarsi are pure white and of normal form.

Wings : colour and scales very similar to those of *oidipodeios*. First submarginal cell one-third of its length longer than the second posterior cell. The stem of the first submarginal more than half as long as the cell. All these cross-veins are closer together. Sixth vein turns at right angles to costa at its extremity.

Genitalia : externally very similar to *oidipodeios*.

*Length*.—4 mm.

♀. Head as in male. Antennae : the verticillate hairs are shorter and less numerous.

Palpi very short, and less densely scaled than in the former.

Proboscis and clypeus, pleurae and prothoracic lobes, thorax and scutellum, and halteres as in male.

Abdomen : the venter a pale golden colour, with brown apical bands on the fourth, fifth and sixth segments. The dorsum and sides are velvety black, with oblique white basal lateral bands, becoming apical on the sixth and seventh segments. Abdomen narrowed towards its extremity. Legs and tarsi : as in male.

Wings : first submarginal cell more than one-third of its length longer than the second posterior. The stem of the first submarginal is less than half the length of the cell. The supernumerary and mid cross-veins are close together ; the posterior cross-vein about its own length towards the base of the wing. Sixth vein as in male.

*Length*.—4 mm.

*Habitat*.—Obuasi and Kumasi, in bush; August to November at Obuasi, 11 A.M. to 1 P.M.; October, Kumasi, 11 P.M."

*Types* presented by Dr. Graham to the British Museum.

ERETMAPODITES CHRYSOGASTER. Graham (1909).

The Entomologist, XLII., p. 157 (1909).

"♂. The head is covered, as in *oidipodeios*, with dense parti-coloured flat scales in front, and in a triangular area behind with golden, narrow-curved, and black upright and golden upright forked scales. Six bristles project forward between the eyes, the anterior pair being golden in colour.

Antennae plumose, the verticillate hairs pale brown. There are a few black scales on the basal segment, and the second segment is scaled also. The two apical segments are three times the length of the others.

Palpi thin, acuminate, shorter than proboscis, without plume hairs, black.

Proboscis long, thin, blue-black, curved apically.

Clypeus dark brown, nude.

Thorax: the mesonotum is covered with mingled black, narrow-curved and golden, narrow-curved scales. Three parallel longitudinal narrow black bands run backward over the central portion, the median black band being continued to the scutellum by a band of golden scales. The edge of the mesonotum is surrounded by an interrupted border of golden scales.

Scutellum: the middle lobe is covered with a median band of white and two lateral bands of purple flat scales. There are four long bristles and some shorter ones on the edge. The lateral lobes are covered with golden, narrow, and black, narrow-curved scales.

Pleurae a dark golden colour, with patches of silvery-white flat scales on meso- and meta-pleura, as in *oidipodeios*. The pro-thoracic lobes are covered with dense silvery-white flat scales, and the apex of the prosternum with similar scales, as in *oidipodeios*.

Halteres: base pale, stalk and knob covered with bluish flat scales.

Metanotum brown, with five hairs and a few golden, narrow-curved scales at the apex.

Abdomen: the venter is pale golden, with apical black bands on the fifth, sixth, and seventh segments. The dorsum and sides

are velvety black, with triangular lateral white spots, the apex of the triangle being towards the dorsum and the base resting on the edge of the golden venter. There is an apical, dorsal, silvery band on the seventh segment.

Legs a blue-black, with apical white bands on the femora of the third pair. The last two segments of the hind tarsi are feathered with elongated black scales.

Ungues : first pair equal, one simple, one uniserrate ; second pair same as first pair ; third pair equal, small, simple. The last

segment of the tarsus of the first and second pairs has a stout tooth or thorn on the ventral surface inserted immediately behind the joint. There is no such tooth on the tarsus of the third pair.

Wings very darkly scaled with *Trichoprosopon*-like scales, bluish and markedly ribbed. First submarginal cell one-fourth of its length longer than the posterior cell. The stem of the first submarginal is about two-thirds the length of the cell. The supernumerary and mid cross-veins are close together, the posterior

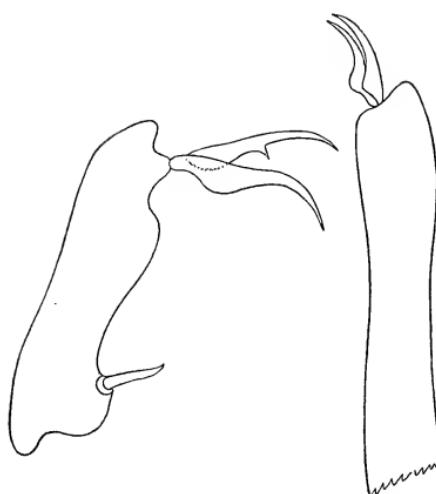


Fig. 245.

*Eretmapodites chrysogaster*. Graham.  
First and third unguis ♂ (Graham).

about its own length towards the base of the wing. The sixth vein turns at right angles to the costa just before its termination.

Genitalia : the claspers are long, curved, and without terminal articulate spine, covered, the basal half with scales, the distal half with seven long hairs. The harpes are long, curved, and expanded into a flattened blade tapering to a rounded point.

*Length*.—5 mm.

♀. Head as in male. Antennae : much less plumose ; otherwise similar to those of the male. Palpi : short, black-scaled, acuminate.

Proboscis, clypeus, thorax, scutellum, pleurae, prothoracic lobes, halteres, metanotum as in male.

Abdomen : as in male, and with the dorsal silvery band on the seventh segment complete.

Legs as in the male, but the last two segments of the hind tarsi are of normal form, i.e., unfeathered.

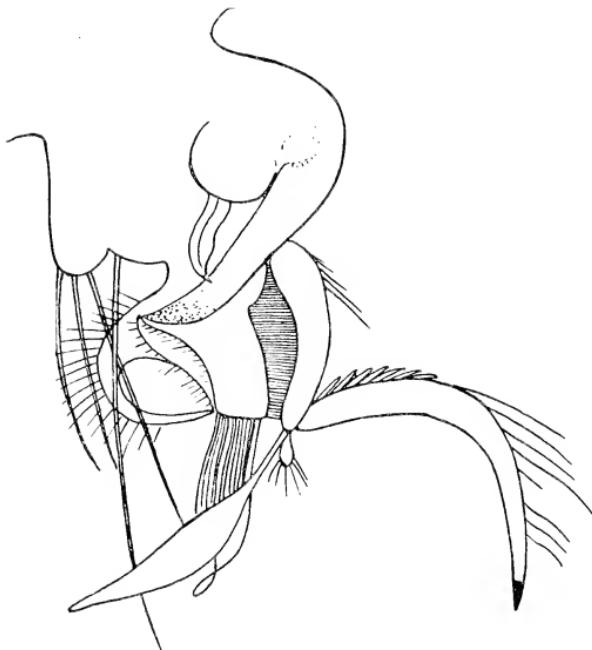


Fig. 246.  
*Eretmapodites chrysogaster*. Graham.  
♂ genitalia (Graham).

Ungues : first pair equal, uniserrate ; second pair equal, uniserrate ; third pair equal, simple.

Wings : colour and scales as in male. First submarginal cell

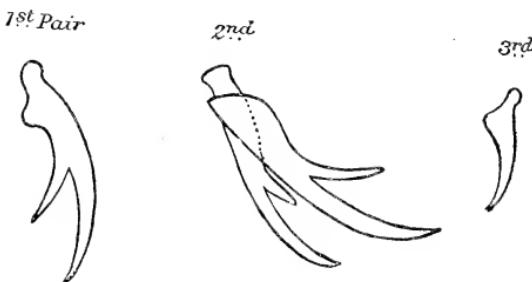


Fig. 247.  
*Eretmapodites chrysogaster*. Graham.  
Ungues of ♀ (Graham).

one-fifth of its length longer than the second posterior cell. The stem of the first submarginal is usually one-third the length of the cell. The supernumerary and mid cross-veins are close

together, the posterior about its own length towards the base of the wing. The sixth vein is as in the male.

*Length.*—6 mm.

*Habitat.*—Obuasi, Kumasi, Dompoasi; taken in bush August to November. Also reared from larvae taken in a small collection of water in the hollow of a tree near Dompoasi, Aug. 14."

*Types* in the British Museum.

**ERETMAPODITES INORNATUS.** Newstead (1907).

Anns. Trop. Med. and Parasit. I., No. 1, p. 12 (1907), Newstead.

" Head clothed with brilliant silvery metallic scales with a patch of black ones in the centre. Thorax rich brown with two median, two short lateral and a continuous marginal stripe of golden-yellow scales. Abdomen black, penultimate segment of male with two lateral silvery spots; apical segment, in female only, almost entirely covered by silvery metallic scales; venter with five metallic bands. Legs long, black, with coppery or bronzy-brown reflections; no paddles to hind tarsi of ♂.

♀. Large basal median area of head clothed with flat black scales and a few isolated metallic silvery ones; upright forked scales black, rigid, occupying the dark area only; nape with a few narrow-curved golden-yellow scales; lower third at the sides with flat black ones. Palpi densely clothed with black scales. Proboscis black with beautiful blue reflections.

Thorax: prothoracic lobes clothed with flat silvery scales except at base where they are black, there are also a few outstanding yellow scales and three long black bristles; mesothorax covered with dark brown and golden-yellow curved scales; the latter forming two median, two lateral and a continuous marginal stripe; the median stripes are short and curved downwards, almost touching the marginal stripe; mid lobe of the scutellum with a long patch of silvery metallic scales bordered by narrow-curved black ones; lateral scales with a tuft or rosette of narrow-curved golden-yellow and a few black scales; metanotum with three black chaetae and three minute narrow curved scales (in type ♀); pleurae yellowish-brown or ochreous with a well-defined silvery line. Abdomen black, basal half bronzy-brown and black in some lights; penultimate segment with two lateral silver spots; terminal segment silvery tipped with black; venter black with five brilliant silvery bands and two lateral terminal silvery spots; the terminal band is

interrupted in the centre by a narrow line of golden scales, which are continued into the succeeding segment, where they form a rectangular basal patch.

Legs black, bronzy-brown or peacock-green in some lights; tarsi pale; coxae ochreous; knee spots to posterior part more conspicuous than in the anterior and mid pairs.

Wings clothed with dark brown scales, but in strong lights are of a beautifully bronzy peacock-blue and green.

*Length*.—4·50 to 6·80 mm.

♂. Head as in ♀, but the narrow-curved golden scales are

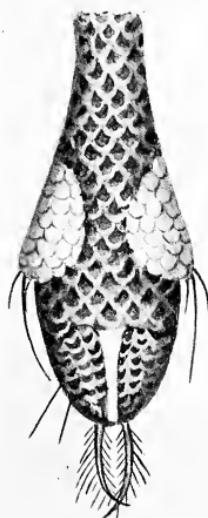


Fig. 248.

*Eretmapodites inornatus*. Newstead.  
Apex of ♂ abdomen (after Newstead).

more numerous and extend over the whole of the black median patch.

Thorax: prothoracic lobes and mesothorax as in the ♀; scutellum rubbed in both specimens, but there are traces of a similar decoration to that which is seen in the ♀; metanotum nude.

Abdomen slender, cylindrical; black with peacock-blue reflections; antepenultimate segment enormously dilated, with two large lateral, silvery patches, genitalia with claspers of great length, and the slender basal segment clothed with hairs and scales; second segment with a long apical spine.

*Length.*—About 4 mm.

*Habitat.*—Coquilhatville; Lusambo, Congo Free State." (Newstead.)

*Observations.*—Described by Newstead from adults caught in the bush near water. On one occasion they were caught in numbers near a native village. They fed viciously at five in the afternoon, and none of the thirty ♀'s caught at that hour appeared to have previously fed on blood.

Newstead points out that this species is told from *E. quinquevittatus*, Theobald, by the presence of narrow curved golden-yellow scales on the head and the absence of paddles to the hind tarsi of the ♂.

*Types* in the collection of the School of Tropical Medicine, Liverpool.

ERETMAPODITES MELANOPOUS. Graham (1909).

Entomologist, XLII., p. 158 (1909).

"♂. Head, antennae, palpi, proboscis, clypeus, as in *chrysogaster*.

Thorax as in *chrysogaster*, but the ground colour is somewhat darker brown, and black scales predominate; scutellum, pleurae, halteres, metanotum, as in the same.

Abdomen is a velvety black, with basal white ventral

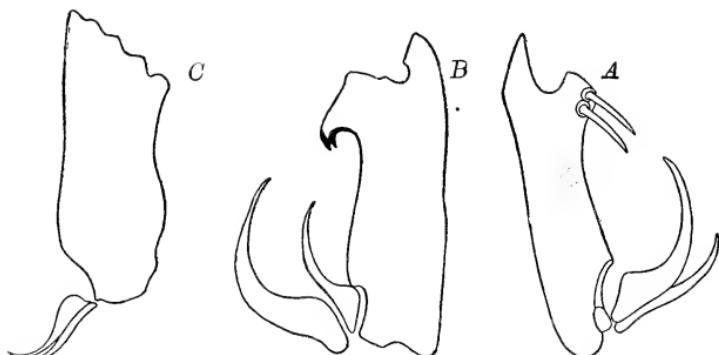


Fig. 249.

*Eretmapodites melanopous*. ♂. Graham.

*A*, fore; *B*, mid; *C*, hind unguis. (Graham).

banding, the bands showing laterally, and gradually becoming more apical till the apex is white ventrally on the sixth segment. There is a yellow spot on the sixth and seventh segments of the venter. The white banding becomes dorsal on the seventh segment, but the lateral spots do not meet in the middle line.

Legs as in *chrysogaster*, but the hind tarsi are unfeathered; unguis, first pair unequal, simple; second pair unequal, simple; third pair equal, simple. The terminal segment of the tarsus of the first pair has two strong teeth inserted immediately behind the joint. The terminal segment of the second pair has two short thick teeth, differing in shape and insertion from those of the first pair. There are no teeth on the tarsi of the third pair.

Wings as in *chrysogaster*, but first submarginal cell is about one-third of its length longer than the second posterior, and the stem of the first submarginal cell is about one-half the length of the cell. The supernumerary and mid-cross-veins are close together, the posterior cross-vein about its own length towards the base of the wing; genitalia, the claspers are long and curved, and without terminal articulate spine, and generally as in *chrysogaster*.

*Length*.—5 mm.

♀. Head as in male; antennae less plumose, and as in female *chrysogaster*; palpi short, black, acuminate.

Abdomen as in male almost exactly, the dorsal silvery band on the seventh segment being incomplete in the middle line, as in male.

Legs as in male; unguis, first pair equal, uniserrate; second pair equal, uniserrate; third pair equal, simple.

Wings as in male, but first submarginal cell is one-fourth of its length longer than the second posterior cell, and the stem of the first submarginal cell is somewhat more than one-third the length of the cell. Cross-veins as in the male; sixth vein as in the male.

*Length*.—6 mm.

*Habitat*.—Obuasi in June, July, August, October, and November, in bush, between 11 A.M. and 3 P.M." (Graham).

*Types* in the British Museum.



Fig. 250.  
*Eretmapodites melanopous*.  
Graham.  
Unguis of ♀ (Graham).

*ERETMAPODITES AUSTENII. nov. sp.*

Head silvery-white, darker in middle; palpi and proboscis black. Thorax golden with five dark lines, the three median ones parallel, the lateral curved outwards and then bending in towards the head. Abdomen black with apical lateral snow-white spots; venter cream-coloured, the sixth and seventh segments with apical black bands. Legs deep brown, femora pale ochreous at base and below, apex of hind femora white; male legs unpaddled.

♀. Head clothed with flat, silvery-white scales over most of the area with a yellow area behind composed of a few flat yellow scales and many yellow narrow-curved ones; two median areas of thin black upright forked scales and some yellow ones behind, four (?) golden chaetae project forwards over the eyes and longer black ones further back; palpi, clypeus and proboscis black, the first bristly; antennae black with pale pubescence, the basal and second segment with small flat dull yellow scales. Eyes black and golden.

Prothoracic lobes covered with flat white scales; mesonotum bright brown clothed with narrow-curved bright golden-yellow scales and ornamented with three broad median parallel lines of dark scales which unite before the scutellum into a dark scaled mass, which has a median yellow area running to the scutellum; there is also a thinner dark line on each curved towards the head, the golden scales pass right round the front of the mesonotum; chaetae golden and brown; scutellum pale golden with flat scales to the median lobe dull white in the middle, dark at the sides; lateral lobes with mostly golden narrow-curved scales, but a few narrow-curved dark ones; four large and two small posterior bristles to the mid lobe; pleurae pale golden yellow with a broad line of silvery-white scales; metanotum yellow, nude.

Abdomen black with apical lateral snow-white spots; venter pale creamy-yellow to almost pale golden, the fifth to seventh segments with apical dark bands of outstanding scales.

Legs deep brown, base and under side of femora pale ochreous, a white apical femoral spot to hind legs, white puncta on the coxae; fore and mid unguis equal and uniserrate, hind equal and simple.

Wings with brown dense broad scales, many of the lateral ones rather long. First fork-cell much longer and narrower than

the second, its stem a little more than one-third the length of the cell, its base nearer the base of the wing than that of the second; stem of the second about as long as the cell; posterior cross-vein slightly more than its own length distant from the mid cross-vein.

*Length*.—5·5 to 4 mm.

♂. Head, thorax, abdomen, like the ♀. Palpi black, thin, no hair tufts, not as long as the proboscis, the last two segments of nearly equal length. Fore and mid unguis very unequal and simple, hind equal and simple.

Wings similar to ♀, but the posterior cross-vein is not quite its own length distant from the mid. Genitalia small, claspers curved with long hairs and small scales on one side, and with a small lateral dark thick terminal spine.

*Length*.—5 to 4 mm.

*Habitat*.—Wilberforce, Free Town (E. E. Austen); Sierra Leone (Captain Gratton).

*Time of capture*.—3, 14, 24. ix. 99.

*Observations*.—Mr. Austen bred this species from larvae in roadside puddles and in an old bottle. This species is very near Graham's *chrysogaster*, but differs in the silvery-scaled head, different ♂ unguis and genitalia, and also near his *melanopus*, but the male clasper has a terminal spine, and the ♀ antennae have yellow scales on the basal and second segment. I cannot trace any signs of scales or chaetae on the metanotum of the ♂ and ♀'s I have examined. Newstead (Anns. Trop. Med. and Parasitology, I., 1. 13. 1907) says they are quite evident in both *quinquevittata* and *austenii* in the ♀'s. I noted in one ♀ a false squamose appearance only.

### GENUS **GOELDIA**. Theobald (1903).

Mono. Culicid. III., 330 (1903).

A single species only so far described.

#### **GOELDIA FLUVIATILIS**. Theobald (1903).

Mono. Culicid. III., 331 (1903).

British Guiana; Brazil.

*Type* in the British Museum.

## METANOTOTRICHAE-ISOMICROPALPAE.

(Palpi short in both sexes.)

See p. 554.

## SUB-FAMILY DENDROMYINAE. LUTZ.

SABETTINAE. Blanchard.

The following genera occur in this sub-family:—

- A. Legs with paddle-like structures ..... *Sabettus*. R. Desvoidy.
- AA. Legs without paddle-like structures.
  - a. Lateral vein scales linear.
    - Proboscis longer than body ..... *Phoniomyia*. Theobald.
    - Proboscis shorter than body, swollen at apex ..... *Wyeomyia*. Theobald.
    - Metanotum with white scales ..... *Menolepis*. Lutz.
  - aa. Long dense lateral vein scales on 5th vein ..... *Bolbodeomyia*. Theobald.
  - aaa. Lateral vein scales obovate or spatulate.
    - Proboscis fine at apex same length as abdomen; posterior and mid cross-veins in one line ..... *Sabethoides*. Theobald.
    - Proboscis short, apex swollen; posterior cross-vein slightly nearer base than mid. Scales of mesonotum very brilliant. Metathorax with scales; proboscis same in ♂ and ♀ ..... *Sabethinus*. Lutz.
    - Scales of metanotum dusky metallic; clypeus without scales ..... *Dendromyia*. Theobald.
    - Clypeus with scales ..... *Prosopolepis*. Lutz.
  - Metanotum nude. Resembling *Dendromyia*, but head with narrow-curved scales in middle and scutellum with narrow-curved scales *Philodendromyia*. Theobald.\*
  - Head scales flat except a row of narrow-curved ones behind; flat scales scutellum. *Culex* venation and scales; apex abdomen bristly *Polylepidomyia*. Theobald.\*

\* These two genera apparently have nude metanota and should then come in the Metanotopsilae-Micropalpae after the genus *Mimomyia*.

GENUS **SABETHES.** Robineau-Desvoidy (1827).

Essai. s. l. Tri. Culicid., 411 (1827), Robineau-Desvoidy; Mono. Culicid. I., 247 (1901); II., 345 (1901); III., 321 (1903); IV., 594 (1907), Theobald.

Six species are described in this genus; they tabulate as follows:—

Mid legs only with paddles.

Paddles all black; abdomen with silvery lateral spots..... *remipes*. Wiedemann.

Paddles deep brown; abdomen blue and violet with golden lateral spots..... *albibravatus*. Lutz.

Abdomen purple and white..... *purpureus*. Neiva.

Paddles white at apex ..... *nitidus*. Theobald.

All legs more or less paddled.

White and black scales to paddles..... *longipes*. Macquart.

No white to paddle ..... *lutzii*. Theobald.

## SABETHES REMIPES. Wiedemann (1828).

Auss. Zweiflüg. Ins. I., 573 (1828), Wiedemann; Mono. Culicid. I., 248 (1901); III., 324 (1903).

Amazon region; Hatatura and Otyba, Brazil; British Guiana.

## SABETHES ALBIPRIVATUS. Lutz (in Theobald) (1907).

Mono. Culicid. IV., 595 (1907), Theobald.

São Paulo and Rio de Janeiro; Brazil.

*Type* in the British Museum.

## SABETHES PURPUREUS. Neiva (in Peryassu) (1908).

Culicideos do Brazil, 287 (1908), Peryassu.

Brazil.

## SABETHES NITIDUS. Theobald (1901).

Mono. Culicid. II., 347 (1901); III., 326 (1903).

Para, Brazil.

*Type* ♀ in the British Museum.

## SABETHES LONGIPES. Fabricius (1794).

*Sabethes loculipes*. Rob. Desvoidy (1827).

*Culex longipes*. Fabricius (1794).

Syst. Antl. IV., 400, 2 (1794), Fabricius; Mono. Culicid. I., 250 (1901); III., 327 (1903), Theobald.

Amazons, Haitaba, Lower Amazon, Para, Brazil; Guiana.

**SABETHES LUTZII.** Theobald (1903).

Mono. Culicid. III., 323 (1903).

Manaos, on the Amazon.

*Type* in the British Museum.

**GENUS PHONIOMYIA.** Theobald (1903).

Mono. Culicid. III., 311 (1903); IV., 593 (1907).

Ten species have been described as follows :—

**PHONIOMYIA LONGIROSTRIS.** Theobald (1901).

*Wyeomyia longirostris.* Theobald (1901).

Mono. Culicid. II., 275, 277 (1901); III., 311 (1903).

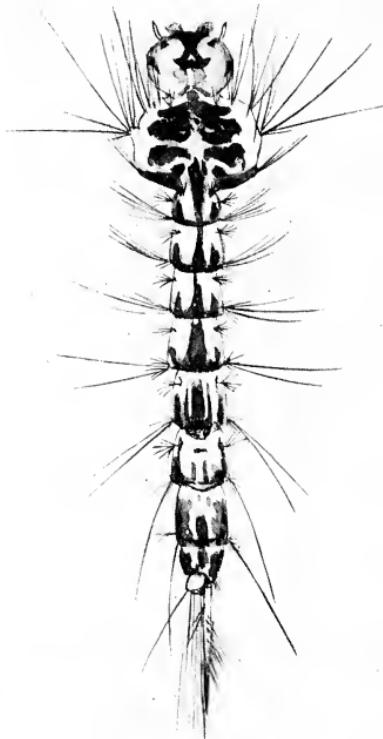


Fig. 251.

Larva of *Phoniomyia longirostris*. Theobald.

Rio de Janeiro; Trinidad.

*Types* in the British Museum.

The larva (Fig. 251) is figured by Peryassu.

**PHONIOMYIA QUASILONGIROSTRIS.** Theobald (1907).

Mono. Culicid. IV., 598 (1907).

Mana, Rio de Janeiro, Brazil.

*Type* in the British Museum.

**PHONIOMYIA PALLIDOVENTER.** Theobald (1907).

Mono. Culicid. IV., 598 (1907).

Rio de Janeiro.

*Type* in the British Museum.

**PHONIOMYIA BIMACULIPES.** Theobald (1905).

Ann. Mus. Nat. Hung. III., 114 (1905); Mono. Culicid. IV., 600 (1907).

Moroka and Friedrich-Wilhelmshafen, New Guinea.

*Type* in the National Museum, Budapest.

**PHONIOMYIA INDICA.** Theobald (1905).

Ann. Mus. Nat. Hung. III., 115 (1905); Mono. Culicid. IV., 601 (1907).

Singapore.

*Type* in the National Museum, Budapest.

**PHONIOMYIA MAGNA.** Theobald (1905).

Ann. Mus. Nat. Hung. III., 117 (1905); Mono. Culicid. IV., 602 (1907).

S. Antonio, Bolivia.

*Type* in the National Museum, Budapest.

**PHONIOMYIA CAERULEOCEPHALA.** nov. sp.

Head brown in some lights, rich deep violet blue in others; proboscis long and black; thorax uniformly bronzy brown; silvery puncta on pleurae. Abdomen black, unbanded, with basal lateral creamy white spots and creamy white scaled venter. Legs uniformly deep brown with bronzy sheen.

♀. Head clothed with flat scales, brown in some lights, a beautiful metallic deep violet-blue in others and in certain positions the front half brilliant, the posterior black; clypeus pale fawn coloured; antennae brown with pale pubescence and

black verticillate hairs, basal segment with pale testaceous areas ; proboscis deep brown, as long as the whole body ; palpi deep brown, prominent.

Thorax deep brown, with large smoky and bronzy brown spindle-shaped scales scattered irregularly ; a small patch of flat similar coloured ones over the roots of the wings and the spindle-shaped ones becoming longer and larger before the scutellum ; scutellum brown with flat brown scales and two brown posterior border chaetae to the mid lobe ; metanotum bright brown ; pleurae brown, with a patch of flat dull ochreous scales in front running up to the prothoracic lobes and with flat silvery-white scales to some extent forming a short broad line up to the root of the wings.

Abdomen deep black with deep violet reflections, unbanded with long white lateral spots, practically extending the whole length of the segment ; venter all creamy scaled.

Legs unbanded, deep brown with ochreous and bronzy reflections, bases yellow, and with some flat silvery scales, tibiae with a few large spines ; unguis small equal and simple.

Wings with brown scales, the fork-cells rather short, the first fork-cell longer and a little narrower than the second fork-cell, its stem more than half the length of the cell ; its base nearer the apex of the wing ; stem of the second fork-cell more than



Fig. 252.  
Wing of *Phoniomyia caeruleocephala*. ♀. n. sp.

half the length of the cell ; the branches of the second vein somewhat contracting towards the apex ; posterior cross-vein longer than the mid about its own length distant from it.

*Length.*—4 mm.

♂. Like the ♀, but the head shows more play of colours, in some lights there is a frontal median creamy spot and a median transverse line of the same before the dark posterior area. Antennae with long brown plume hairs. A more prominent

line of silvery white scales running from the prothoracic lobes to near the base of the wing.

*Length*.—4 mm.

*Habitat*.—Hakgala, Ceylon (E. Green).

*Time of capture*.—iii. 07.

*Observations*.—Described from a perfect ♂ and ♀.

*Type* in the British Museum.

**PHONIOMYIA CHRYSOMUS.** Dyar and Knab (1907).

Journ. New York Ent. Soc. XV., 208 (1907).

“ ♂. Proboscis long and slender, black; occiput dark scaled, a small silvery spot on the vertex; prothoracic lobes prominent, clothed with shining coppery scales; mesonotum and scutellum clothed with dark scales with faint greenish and bronzy lustre, setae of scutellum dark; metanotum deep brown with a group of setae; abdomen black above with faint bluish sheen, beneath silvery-white, the colours separated in a straight line; legs dark with a brassy reflection beneath, the mid legs with the third and fourth tarsal joints and the apex of the second silvery-white at the side.

*Length*.—2·5 mm.

One specimen, Tabernilla, Canal Zone, Panama (August Busck, Collector), bred from larvae in water in leaves of bromelias.”

Two other species have been described by Messrs. Dyar and Knab.

**PHONIOMYIA PHIOPHONE.** Dyar and Knab (1907)

Journ. New York Ent. Soc. XV., 209 (1907).

**PHONIOMYIA SCOTINOMUS.** Dyar and Knab (1907).

Journ. New York Ent. Soc. XV., 209 (1907).

### GENUS **WYEOMYIA.** Theobald (1901).

Mono. Culicid. II., 267 (1901); III., 310 (1903); IV., 596 (1907).

Under this genus Dyar and Knab have placed *Limatus*, Theobald, a perfectly distinct insect having no relation to *Wyeomyia*, and also *Phoniomyia* and *Dendromyia* which are also well defined genera easily identified by anyone making a careful and competent examination.

WYEOMYIA GRAYII. Theobald (1901).

Mono. Culicid. II., 269 (1901); III., 311 (1903).

St. Lucia; Grenada; Barbados.

*Type* in the British Museum.

WYEOMYIA PERTINANS. Williston (1896).

*Aedes pertinans.* Williston (1896).

Trans. Ent. Soc. Lond., 271 (1896), Williston; Mono. Culicid. II., 272 (1901), Theobald.

St. Vincent.

WYEOMYIA GREENII. Theobald (1905).

Journ. Bombay Nat. Hist. Soc. XVI., 247 (1905); Mono. Culicid. IV., 596 (1907).

Peradeniya, Ceylon.

*Type* in the British Museum.

WYEOMYIA ARANOIDES. Theobald (1901).

Mono. Culicid. II., 274 (1901).

Taipang, Perak, Malay States.

*Type* in the British Museum.

WYEOMYIA (?) LEUCOSTIGMA. Lutz (1904).

Mosq. do Brasil, 14 (1904), Lutz (in Bourroul); Mono. Culicid. IV., 597 (1907), Theobald.

Brazil.

WYEOMYIA (?) MICROPTERUS. Giles (in Theobald) (1901).

Mono. Culicid. II., 281 (1901).

This is a *Culex*.

The following have been described by Dyar and Knab, but as I do not feel satisfied at their correct generic position the names merely are given.\*

\* Many other species by these authors are given in the Appendix.

WYEOMYIA CODIOCAMPNA. Dyar and Knab (1907).

Journ. New York Ent. Soc. XV., 209 (1907).

WYEOMYIA CIRCUMCINCTA. Dyar and Knab (1907).

Journ. New York Ent. Soc. XV., 210 (1907).

WYEOMYIA MACROTUS. Dyar and Knab (1907).

Journ. New York Ent. Soc. XV., 212 (1907).

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GENUS **MENOLEPIS.** Lutz (1908).

Os Culicideos do Brazil, 38 (1908), Peryassu.

Proboscis straight ; metanotum with white scales.  
A single species is described in this genus by Lutz.

**MENOLEPIS LEUCOSTIGMA.** Lutz.

Os Culicideos do Brazil, 294 (1908), Peryassu.

Brazil.

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GENUS **BOLBODEOMYIA.** Theobald (1910).

Rec. Ind. Mus. IV. 31 (1910).

Head clothed with flat scales ; palpi very short in the ♀, slightly longer in the ♂ ; antennae pilose in both sexes ; thorax with spindle-shaped scales ; prothoracic lobes with small flat scales, scutellum with flat scales ; metanotum with a bunch of chaetae posteriorly. Wings with normal venation with rather long lateral vein scales on the apical areas of the veins and with very prominent long dense lateral vein scales on the fifth vein along the stem and one branch. Complex ♂ genitalia. A very marked genus.

**BOLBODEOMYIA COMPLEX.** Theobald (1910).

Rec. Ind. Mus., IV. 31 (1910).

Head, thorax, legs, antennae and palpi and proboscis brown  
Abdomen brown above, pale grey below in ♀, ochreous in the ♂.

♂. Head clothed with flat brown scales with violet reflections and a pale creamy border around the eyes and at the sides ; chaetae dark ; clypeus, palpi and proboscis deep brown, palpi very small ; antennae deep brown, basal segment brown, pilose.

Thorax shiny deep brown with scattered brown and paler spindle-shaped scales ; prothoracic lobes covered with small flat creamy scales ; scutellum ochreous brown with flat dull scales ; metanotum brown with a large area of pale hairs posteriorly,

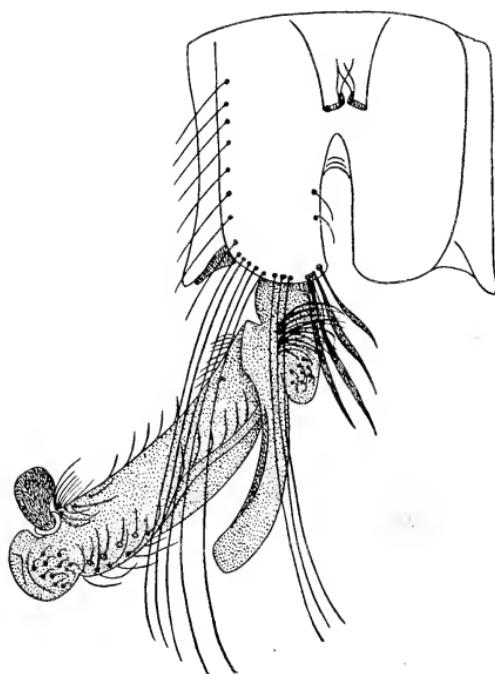


Fig. 253.

*Bolbodeomyia complex*. Theobald. ♂ genitalia.

arising from black points ; pleurae ochreous brown with flat white scales.

Abdomen deep brown, traces of some pale scales at the bases of the apical segments ; venter pale grey, the integument ochreous.

Legs deep brown, coxae ochreous with white scales, under side of femora pale.

Wings with short fork-cells, the first longer, but slightly narrower than the second, its base slightly nearer the base of the wing, its stem two-thirds the length of the cell ; stem of the second as long as the cell ; posterior cross-vein about two and a

half times its own length distant from the mid. Male genitalia very complex.

*Length*.—3·8 mm.

♀. Very similar to the male, but rather more white scales in front of the head, and the palpi smaller. The abdomen has



Fig. 254.  
Wing of *Bolbodeomyia complex*. ♂. Theobald.

some traces of basal white lateral spots and the venter has some narrow apical black bands. Wings with the first fork-cell slightly longer and about the same width as the second, its stem about half the length of the cell; stem of the second rather more



Fig. 255.  
Wing of *Bolbodeomyia complex*. ♀. Theobald.

than half the length of the cell; posterior cross-vein rather more than twice its own length distant from the mid, some long lateral vein-scales, the fifth long vein, except on its upper branch, densely clothed with long thin scales.

*Length*.—3 mm.

*Habitat*.—Dawna Hills, 2,000–3,000 feet, L. Burma (♂) and jungle at base of Dawna Hills (♀).

*Time of capture*.—1. 2. and 3. iii. 08 (Annandale).

*Observations*.—Described from one ♂ and one ♀, practically

perfect, but with slightly rubbed thorax. A small obscure *Aedine*, but at once told when examined microscopically by the complex male genitalia and the long lateral scales along one side of the fifth vein.

*Types* in the Indian Museum, Calcutta.

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**GENUS SABETHOIDES.** Theobald (1903).

Mono. Culicid. III., 328 (1903); IV., 617 (1907).

Three species are described in this genus. They tabulate as follows :—

Abdomen metallic green, mauve, purple, blue, white and yellow, with white basal lateral spots; venter yellow; mid legs with venter of 1st to 3rd tarsal segments silvery-white; head green .....	<i>confusus</i> . Theobald.
Similar, but dorsum of abdomen with no white-scaled lateral areas .....	<i>undosus</i> . Coquillett.
Legs without bands or white areas; abdomen purple, with coppery-red patches, lateral areas silvery-white; head purple .....	<i>purpureus</i> . Theobald.

Dyar and Knab describe a species *identicus*, which they say is the same as Coquillett's *undosus*, but the larvae differ. If the larvae are really different and not stages of one species, then a detailed examination of the adults will probably reveal marked distinctive characters. Another species, *canfieldi*, described by Dyar and Knab as a *Sabethes* is certainly not in that genus and may come here.

**SABETHOIDES CONFUSUS.** Theobald (1903).

*Sabethes remipes* ♀. Theobald (non Wied.) (1901).

*Sabethes nitidus* ♀. Theobald (1901).

Mono. Culicid. II., 346 (1901) (*remipes*), 347 (1901) (*nitidus*) ;  
III., 328 (1903), Theobald.

Para, Brazil.

*Type* in the British Museum.

## SABETHOIDES UNDOSUS. Coquillett (1906).

Proc. Ent. Soc. Wash. VII., 4, 186 (1906).

Near *S. confusus*, Theobald, but the dorsum of the abdomen is not white-scaled in the front angles of the segments.

*Habitat*.—West Indies.

## SABETHOIDES PURPUREUS. Theobald (1907).

Mono. Culicid. IV., 617 (1907).

Rio de Janeiro.

*Type* in the British Museum.

## SABETHOIDES (?) IDENTICUS. Dyar and Knab (1907).

*Sabethes identicus*. Dyar and Knab. (1907).

Journ. N. York Ent. Soc. XV., 207 (1907).

“ ♀. Identical with *S. undosus*, Coq.; we are unable to demonstrate any differences whatever between the adults.

Four specimens, Tabernilla, Canal Zone, Panama (A. Busck), bred from larvae in bamboo-joints.

The larvae are allied to those of *S. undosus*, but differ in many particulars, so that a distinct species is indicated, in spite of the apparent identity of the adults. The air-tube is short, without any basal enlargement and but two pairs of single hairs; the body of hairs are finer, less coarsely stellate; the dorsal hooks of the seventh segment with a tooth instead of simple; maxillae less stout with seven small teeth instead of four large coarse ones.”

*Note*.—This if allied to Coquillett's *undosus* is of course a *Sabethoides*, not *Sabethes*. The species (?) is probably invalid —(F. V. T.).

## SABETHES (?) CANFIELDI. Dyar and Knab (1907).\*

Journ. N. York Ent. Soc. XV., 207 (1907).

“ ♀. Proboscis shorter than the body, strongly swollen at the apex, black; clypeus prominent, smooth, shining black; tarsi of antennae black with a whitish pubescence; occiput clothed with flat dull metallic-green scales; prothoracic lobes approximated, clothed with brilliant blue and violet scales; mesonotum clothed with dark greenish scales; scales of the scutellum metallic green and blue; metanotum deep brown, with a number of long pale bristles; abdomen

\* This is certainly not a *Sabethes*. It possibly comes in *Sabethoides*. The description is far too vague to place it.—F. V. T.

dark above, with greenish-blue lustre, silvery-white beneath, separated on the sides in a perfectly straight line; legs long and slender without raised scales, black, with light bronzy reflections beneath in certain lights, the tarsi of the middle legs white on the second to fifth joints, the white becoming obscure on the basal part of the second segment, on the hind legs the last two joints white.

*Length.*—3·5 mm.

Twenty-three specimens, Lion Hill, Canal Zone, Panama (August Busck, Collector), all captured.

Named at the suggestion of Mr. Busck, in honour of Dr. Herman Canfield, Assistant Chief Sanitary Inspector of the Canal Zone."

GENUS **SABETHINUS.** Lutz (1904).

*SABETTINUS.* Blanchard (1905).

Mosq. do Brazil, 48 and 57 (1904), Lutz; Mono. Culicid. IV., 618 (1907), Theobald.

Three species are described in this genus. They tabulate as follows:—

Chaetae at base of wings jet black.

Thorax metallic green..... *intermedius.* Lutz.

Thorax metallic deep blue ..... *albiprivatus.* Theobald.  
Chaetae at base of wings light golden-

yellow; general colour gold ..... *aurescens.* Theobald.

**SABETHINUS INTERMEDIUS.** Lutz (1904).

*Sabettinus intermedius.* Lutz-Blanchard (1905).

Mosq. do Brazil, 48 (1904), Lutz; Mono. Culicid. IV., 619 (1907), Theobald.

Brazil.

**SABETHINUS ALBIPRIVATUS.** Theobald (Lutz ms.) 1907.

Mono. Culicid. IV., 620 (1907).

Cantoreira, Brazil.

*Types* in the British Museum.

**SABETHINUS AURESCENS.** Theobald (Lutz ms. nom nud.). 1907.

Mono. Culicid. IV., 622 (1907).

Cantoreira, Brazil.

*Type* in the British Museum.

## GENUS DENDROMYIA. Theobald (1903).

Mono. Culicid. III., 313 (1903); IV., 603 (1907).

Thirteen species have been described in this genus. They tabulate as follows :—

Prothoracic lobes golden scaled.

Thorax ochreous, with two dark areas in front, and dusky before scutellum; abdomen dusky brown, venter ochreous; legs unbanded ..... *asullepta*. Theobald.

Prothoracic lobes with flat mauve scales; abdomen.

dark above, silvery-white below ..... *smithii*. Coquillett.

Prothoracic lobes with flat white scales; abdomen dark above, broad white bands below which appear as lateral dorsal spots; a white spot between the eyes; legs unbanded ..... *scintillans*. Ludlow.

Prothoracic lobes not golden, mauve or white.

*a.* Abdomen with basal snow-white bands, white lateral spots, and white venter; legs black, apex hind tibiae snow-white ..... *argenteoventralis*.  
n. sp.

Similar, but a prominent white spot in front of wing roots ..... *affinis*. n. sp.

*aa.* Abdomen unbanded and unspotted; abdomen yellow to white below; thorax unadorned; pleurae ochreous; head, white line around eyes and in the middle ..... *luteoventralis*. Theobald.

Similar, but hind metatarsus longer than hind tibiae ..... *quasiluteoventralis*. Theobald.

Similar, but no white mid line to head ... *ulocoma*. Theobald.

Last three mid tarsals and apex of second white on one side, except apex of last ... *mitchellii*. Theobald.

*aaa.* Abdomen with lateral pale spots.

*β.* Abdomen with apical silvery-white lateral spots; hind and fore tarsals white beneath; abdomen white below ..... *serrata*. Lutz.

*ββ.* Basal pale lateral abdominal spots; mid feet, last three tarsals and apex of second dull white; prothoracic lobes brown and white-scaled ..... *oblita*. Lutz.

Legs unbanded; knob-like yellow patch of scales between eyes ..... *paraensis*. Theobald.

*aaaa.* Abdomen with a pale creamy line along each side; hind feet partly white beneath *personata*. Lutz.

I have not seen the three following species described by Lutz.

1. Mesonotum without scales; mid feet partly white; posterior cross-vein a good way from middle..... *medioalbipes*. Lutz.
2. All knees and joints of tibio-metatarsals marked with white ..... *anthrostigma*. Lutz.
3. Mesonotum with middle and lateral lines; legs with clear lateral scales beneath the joints; proboscis with white basal area ... *bourrouli*. Lutz.

**DENDROMYIA ASULLEPTA.** Theobald (1903).

Mono. Culicid. III., 315 (1903).

Demerara River, British Guiana.

Type in the British Museum.

**DENDROMYIA SMITHII.** Coquillett (1901).

*Wyeomyia smithii*. Coquillett—Theobald (1903).

*Aedes smithii*. Coquillett (1901).

Canad. Entomo. XXXIII., 260 (1901), Coquillett; Mono. Culicid. III., 295 (1903), 608 (1907), Theobald.

United States; Rio de Janeiro, Brazil.

**DENDROMYIA SCINTILLANS.** Ludlow (1904).

*Heinzmannia scintillans*. Ludlow (1904).

Canad. Ento. XXXVII., 130 (1904), Ludlow; Phil. Journ. Sci. I., 9, 991 (1906), Banks; Mono. Culicid. IV., 604 (1907), Theobald; Mosq. Philip. Isls. 11 (1908), Ludlow.

*Note*.—In Vol. IV. read Camp Stotsenberg for Camp Stotsenberg, Philippine Islands.

**DENDROMYIA ARGENTEOVENTRALIS.** nov. sp.

Thorax deep bronzy brown with white scales in front and at the sides, especially just before the wings; pleurae white scaled. Head black, with some white scales around the eyes and some ochreous ones in the middle; proboscis long, thin, black. Abdomen black, with basal snow-white bands and large white nearly basal lateral spots on the basal segments; venter white. Legs black, apex of hind tibiae snow white; venter of femora pale creamy.

♀. Head clothed with flat and grey scales, white ones around the eyes, black chaetae; clypeus, proboscis and palpi black; the proboscis long and thin about the length of the

abdomen ; palpi prominent, about one-seventh the length of the proboscis ; antennae deep brown, basal segment black with same small dark scales.

Thorax deep shiny bronze, clothed with dark, large and broad narrow-curved scales, white ones in front, at the sides, especially in front of the roots of the wings, all the white scales very loose ; scutellum brown, paler at the edge, clothed with flat dusky scales, and apparently some pale ones (partly denuded) ; metanotum deep brown ; pleurae densely clothed with flat white scales, rounded apically.

Abdomen black, the sixth and seventh segments with basal white bands, the others with basal white lateral spots, which spread upwards on to the dorsum somewhat towards the middle of the segments ; the venter snowy white at the base and for about two-thirds of its length, rest black with a white band ; the scales outstanding on the apical segments.

Legs deep brownish black, except the under side of hind femora, which are pale creamy, and a prominent white band on the apex of the hind tibiae. Fore and mid unguis equal and uniserrate.

Wings with the fork-cells rather long, the first longer but very little narrower than the second, its stem about half the length of the cell ; stem of the second posterior about two-thirds the length of the cell ; bases of the fork-cells about level ; posterior cross-vein shorter than the mid, about four times its own length distant from it. Lateral vein scales on the apices of the second long vein rather broad.

*Length*.—4 mm.

*Habitat*.—Obuasi, Ashanti (Dr. Graham).

*Time of capture*.—29. ix. 07.

*Observations*.—Caught in bush, 6 P.M. Described from a single specimen. It is very marked, owing to the long thin proboscis and black and white ornamentation, especially of the abdomen.

*Type* in the British Museum.

#### DENDROMYIA AFFINIS. nov. sp.

Allied to the former and closely resembling it, but differs in the much smaller fork-cells and smaller size.

♀. Head clothed with flat black scales, with white ones in front and at the sides ; black chaetae at the borders of the eyes, directed inwards from each side ; palpi, proboscis, and antennae deep brownish-black.

Thorax black with broad-curved scales of a bronzy black hue,

white ones in front and forming a prominent patch in front of the roots of the wings.

Abdomen very similar to the former species.

Legs similar to the former species; unguis all equal and uniserrate.

Wings with the fork-cells rather short; the first longer and narrower than the second, its base, if anything, very slightly nearer the apex of the wing, its stem three-fourths the length of



Fig. 256.  
Wing of *Dendromyia affinis*. ♀. n. sp.

the cell; stem of the second fork-cell nearly as long as the cell; posterior cross-vein longer than the mid, not three times its own length distant from the mid.

*Length*.—3 mm.

*Habitat*.—Obuasi, Ashanti (Dr. Graham).

*Time of capture*.—6. xi. 07 and 7. viii. 07.

*Observations*.—Described from two ♀'s, both taken in the bush at 3 P.M. This species comes very near the former, but is smaller and can at once be told by the shorter fork-cells and the more prominent white spot in front of the roots of the wings.

*Type* in the British Museum.

**DENDROMYIA LUTEOVENTRALIS.** Theobald (1901).

*Wyeomyia luteoventralis*. Theobald (1901).

Mono. Culicid. II., 348 (1901).

Para, São Paulo, Brazil; British Guiana; Trinidad.

*Type* in the British Museum.

**DENDROMYIA QUASILUTEOVENTRALIS.** Theobald (1905).

Mono. Culicid. III., 317 (1903); IV., 607 (1907), Theobald.

New Amsterdam, British Guiana.

*Type* in the British Museum.

**DENDROMYIA ULOCOMA.** Theobald (1903).

Mono. Culicid. III., 313 (1903).

Demerara River, British Guiana.

*Type* in the British Museum.

**DENDROMYIA MITCHELLII.** Theobald (1905).

Mosquitoes of Jamaica, 37 (1905); Mono. Culicid. IV., 605 (1907).

Jamaica.

*Type* in the British Museum.

**DENDROMYIA SERRATA.** Lutz (in Theobald) (1907).

Mono. Culicid. IV., 615 (1907), Theobald.

Cantarinova, Poussovia, Brazil.

**DENDROMYIA OBLITA.** Lutz (1904).

Mosq. do Brazil, 49 and 68 (1904); Mono. Culicid. IV., 612 (1907), Theobald.

São Paulo and Goyaz, Brazil.



Fig. 257.

Pupa of *Dendromyia obliterata* (after Silva).

DENDROMYIA PARAENSIS. Theobald (1903).

Mono. Culicid. III., 316 (1903).

Para, Brazil.

*Type* in the British Museum.

DENDROMYIA PERSONATA. Lutz (1904).

Mosq. do Brazil, 22, 49 and 68 (1904), Lutz (in Bourroul); Mono.

Culicid. IV., 613, (1907), Theobald.

São Paulo, Brazil.

The larva is figured by Peryassu.

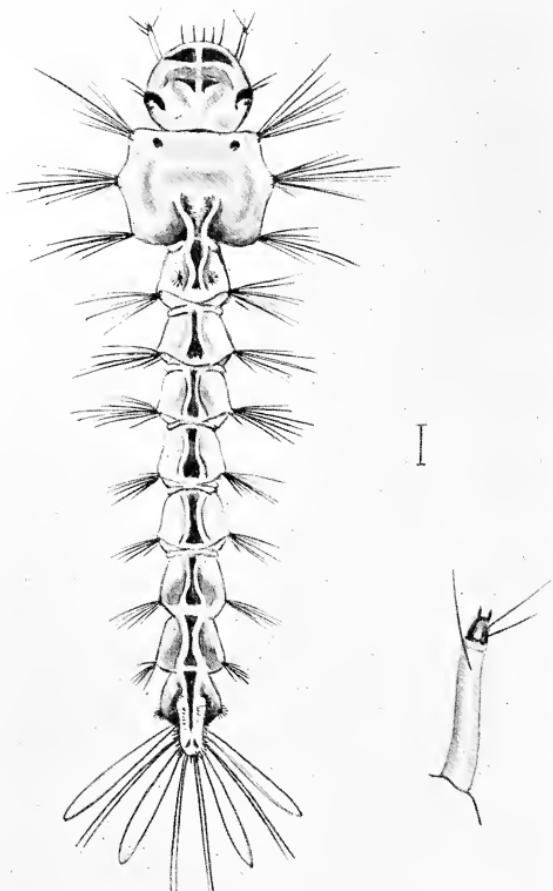


Fig. 258.  
Larva of *Dendromyia personata*. Lutz (after Silva).

DENDROMYIA MEDIOALBIPES. Lutz (1908).

Os Culicideos do Brazil, 303 (1908), Peryassu.

Brazil.

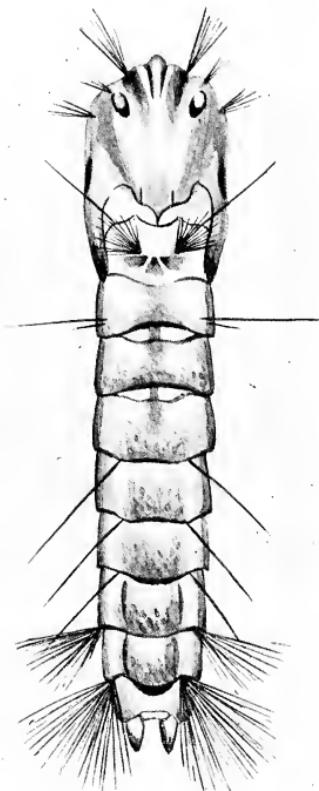


Fig. 259.  
Pupa of *Dendromyia medioalbipes*  
(after Silva).

DENDROMYIA ANTHROSTIGMA. Lutz (in Peryassu) (1908).

Os Culicideos do Brazil, 306 (1908), Peryassu.

Brazil.

DENDROMYIA BOURROULI. Lutz (in Peryassu) (1908).

Os Culicideos do Brazil, 307 (1908), Peryassu.

Brazil.

GENUS **PROSOLEPIS.** Lutz (1908).

Os Culicideos do Brazil, 38 (1908), Peryassu.

Proboscis short, with apex swollen (intumescido), supernumerary cross-vein a little nearer base than median. Clypeus with scales.

Lutz describes one species in this genus.

## PROSOLEPIS CONFUSUS. Lutz (1908).

Os Culicideos do Brazil, 311 (1908), Peryassu.

Mesonotum without longitudinal lines ; clypeus dark, covered with shiny white scales.

Brazil.

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GENUS **PHILODENDROMYIA.** Theobald (1907).\*

Mono. Culicid. IV., 623 (1907).

A single species only so far described.

## PHILODENDROMYIA BARKERII. Theobald (1907).

Mono. Culicid. IV., 623 (1907).

Sarawak.

*Type* ♂ in the British Museum.

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GENUS **POLYLEPIDOMYIA.** Theobald (1905)

Ann. Mus. Nat. Hung. III., 118 (1905) ; Mono. Culicid. IV., 625 (1907).

A single species only so far described.

## POLYLEPIDOMYIA ARGENTEIVENTRIS. Theobald (1905).

Ann. Mus. Nat. Hung. III., 118 (1905) ; Mono. Culicid. IV., 625 (1907).

Panmomu River, New Guinea.

*Type* in the National Museum, Budapest.

\* These two genera are only placed here provisionally, they probably both come after *Mimomyia*, p. 540, the metanotum being nude.

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SUB-FAMILY **LIMATINAE.** THEOBALD.

Mono. Culicid. IV., 627 (1907), Theobald.

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GENUS **LIMATUS.** Theobald (1901).

*Simondella.* Laveran (1902).

Mono. Culicid. II., 349 (1901); III., 333 (1903); IV., 627 (1907).

A single species in this marked genus only described.

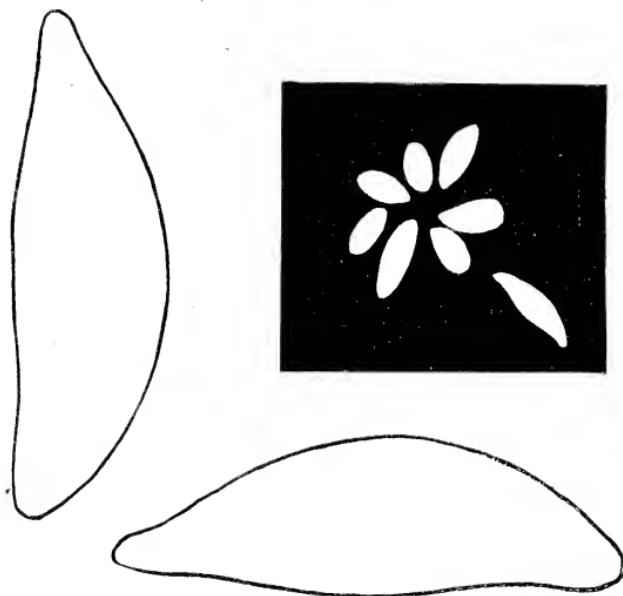


Fig. 260.

Ova of *Limatus durhamii.* Theobald (after Silva) (greatly enlarged).

The ova and pupa have now been figured by Peryassu and are reproduced here (Figs. 260 and 261.)

*LIMATUS DURHAMII.* Theobald (1901).

*Simondella curvirostris.* Laveran (1902).

*Aedeomyia curvirostris.* Neveu-Lemaire (1902).

Mono. Culicid. II., 349 (1901); III., 333 (1903); IV., 627 (1907).

Para, Brazil.

Type in the British Museum.

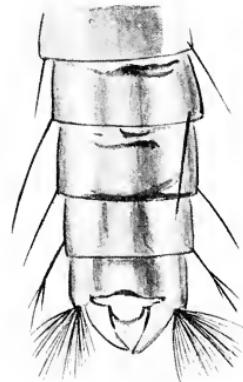


Fig. 261.

*Limatus durhamii.* Theobald.  
Apex of pupa (after Silva).

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SPECIES DESCRIBED AS *AEDES*, BUT UNDOUBTEDLY NOT  
BELONGING TO MEIGEN'S WELL-MARKED GENUS.

The descriptions are not sufficiently clear to place them generically, and they are merely given here for reference. Grabham has evidently followed Dyar's theory of sinking everything into *Aedes* but, if so, Meigen's *Aedes* must not be considered the same as Dyar's.\*

*AEDES UNCATUS.* Grabham (1907).

Canad. Ent. XXXIX., 25 (1907).

"Close to *Stegomyia mediovittata*, Coq., from San Domingo (Canad. Ent., Feb. '06, p. 60), but the sub-dorsal thoracic lines are made up of

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\* Recently it seems Dyar and Knab have altered their classification.

light yellow scales throughout their whole length. Full grown larva with six or seven separate comb scales, each scale with a simple stout curved spine arising from a pear-shaped base. The larvae of this form, collected from hollow trees, have been sent to me from several localities near Kingston (Waverley Estate, Constance Spring, woods above Rockfort). In all the specimens examined the comb scales had simple spines unlike the San Domingo form, which has frigid spines (Dyar and Knab, Journ. N.Y. Ent. Soc. XV., Pl. 5, fig. ii). I am indebted to Dr. G. H. Dyar for comparing the larvae and adults of these two species. Bred specimens vary greatly in size, the largest attaining about 6 mm. in length. The females bite blood without hesitation."

## AEDES AFFIRMATUS. Dyar and Knab (1906).

Proc. Biol. Soc. Wash. XIX., 164 (1906).

"Shining blue, like *Haemagogus splendens*, Willis, but the female with the fore and middle tarsal claws toothed. Head and thorax clothed with metallic blue scales, pleurae silvery white, abdomen dark blue above, with first segment with a white bar on each side, below with silvery white segmental bands. Legs blue-black, middle and hind femora with a silvery white spot at tip, the middle femora narrowly white lined below, the posterior ones very broadly so for the basal three-fourths. Base of first sub-median cell nearer apex of wing than base of second posterior cell.

Four specimens: St. Lucrecia, Vera Cruz, and Salina Cruz, Oaxaca, Mexico; Las Loras, near Puntarenas, and Rio Aranjuez Puntarenas, Costa Rica (Knab).

Larva unknown."

## AEDES PERTINAX. Grabham (1906).

Canad. Ent. XXXVIII., 316 (1906).

"♀. Head with a triangular yellow area in the centre, made up of yellow hairs and narrow curved scales, some rather broad, flattened ones at the sides, sides and back of the head black with many upright forked scales and hairs; antennae dark brown with silvery hairs on the joints; palpi and proboscis black, speckled with silvery hairs, Clypeus dark brown. Prothoracic lobes black, with many long black hairs. Mesonotum black, sparingly covered with very small narrow curved dark brown scales, a narrow line of brilliant golden scales in the mid line extending to the posterior quarter (in some specimens this line is ill-defined, in others broad and conspicuous), a few long hairs near the posterior border and in front of the wing insertions. Scutellum dark brown with many long black hairs. Pleura greyish, with patches of silvery scales and hairs. Abdomen, upper surface black, with moderate basal bands of yellow scales and with large

lateral areas of silvery ones, two small circular areas of golden scales in the centre of each segment. A few long white hairs along the apical border of each segment. Venter almost entirely white, with creamy scales, a few black scales near the apical borders of the segment. Wings, extremities of the long veins with long narrow scales and short broad ones, upper forked cell longer, but about as broad as the lower, its stem half its length; the stem of the lower fork cell nearly as long as cell. The posterior cross-vein half its own length behind the mid cross-vein. Halteres, with pale stems and knobs. Legs black, unbanded, femora and tibiae with many yellow scales beneath, fewer in the metatarsi and tarsi; knee spots small. Ungues all equal and uniserrate, the tooth large.

*Length.*—4 mm.

♂. Head, yellow area in the centre more extensive, broad, flat, yellow scales abundant. Palpi black, terminal joints slightly inflated, a little larger than the proboscis; both terminal joints and apex of the antepenultimate densely covered with long hairs, some very stout ones at the apices of the joints. Mesonotum with the band of golden scales conspicuous.

Terminal clasp segment slender, curved, slightly swollen in the middle, apical spine blunt, about one-fifth length of limb. Basal clasp segment with a large apical lobe; claspette a well developed lobe near the base covered with spines (no long ones present). Harpes, bases villous with fine hairs, at the apex of each a recurved sickle-like portion. Harpogones deeply infuscated, with a strong recurved spine on each. Unci membranous, separated, each terminating in a point. Setaceous lobes pyramidal with about ten strong curved spines along the internal borders only. Ungues of fore and mid legs unequal, the larger claw with two teeth, smaller with one. Ungues of hind legs equal and uniserrate.

*Length.*—4 mm."

The adult larva was also described, with a note to the effect that it superficially resembled that of *A. auratus*, Grabham, and still more so that of *A. hemisurus*, Dyar and Knab.

#### *AEDES AURATUS.* Grabham (1906).

Canad. Ent. XXXVIII., 313 (1906).

"♀. Head covered with narrow curved yellow scales and hairs. Many forked upright yellow scales at the back; a few forked upright scales and black hairs at the sides. Antennae dark brown, joints with pale yellow hairs. Palpi black, speckled with yellow scales. Proboscis black, with scattered yellow scales and hairs, especially near the base. Clypeus black. Thorax rich golden yellow. Prothoracic lobes with black hairs and yellow scales. Mesothorax densely covered with narrow curved golden-yellow scales in front, somewhat more scantily at the back (scales of thorax darker in shade than those on the head);

on each side in front, near the middle line, there are two small dark spots; there is also a large dark area on each side reaching from the prothoracic lobes to above the wing insertions, and extending laterally to the margin, and a pair of conspicuous black spots near the middle line on the posterior third. A row of black hairs extends from these spots to the posterior margin of the mesothorax. Scutellum with patches of white scales and hairs. Metanotum brown. Abdomen black, with narrow basal bands of golden scales and a row of long white hairs along the posterior margin of each segment; lateral areas of silvery scales on the hinder segments; scattered over the dark scaled areas are a number of lighter scales, which form an ill-defined stripe along the middle of the abdomen. Venter white scaled, small apical areas of black on the hinder segments at the sides. Legs black. Femora white below, through the whole length, except near the apex, where there is a black spot; thickly speckled with white scales above, especially near the base; knee spots small. Tibiae, tarsi and metatarsi all ventrally white scaled, a few long bristles on the joints, those along the tibiae longest. Ungues all equal and uniserrate. Wings, veins covered with broad, short, flattened scales, extremities of upper veins with long narrow ones as well. Upper forked cell narrow and a little longer than the lower. Stem about half its length. Posterior cross vein rather more than its own length distant from the mid cross vein. Halteres with pale stems and knobs.

*Length*.—3·5 mm.

♂. Proboscis black, nearly as long as palpi, with scattered yellow scales, especially near the base, apex slightly swollen, tip light brown. Both terminal joints of palpi somewhat swollen, and covered with many long black hairs, more numerous underneath. Ungues of fore and mid tarsi very nearly equal, larger with two teeth, smaller with one basal tooth, unguis of the hind tarsi equal and uniserrate. Genitalia closely resembling those described and figured by Felt. (New York State Museum, Bulletin 97), for *Culicada confirmatus*, Theobald. The spine at the apex of the terminal clasp segment is about one-fifth length of segment. Claspette obsolete, represented by a few weak setae and long hairs, one hair much longer than the others, curved at the tip and swollen towards base. Harpes slender, curved, base without hairs. Harpagones stout, very deeply infuscated with a sharp recurved point. Setaceous lobes with a few short stout setae.

*Length*.—3·5 mm."

Notes on the adult larva are also given.

#### AEDES LITHOECETOR. Dyar and Knab (1907).

Journ. N. York Ent. Soc. XV., 201 (1907).

"♀. Proboscis moderately long, rather slender, black scaled; palpi short, black scaled; occiput clothed with pale yellowish scales, narrow curved ones on the vertex, flat ones on the sides, a small

black patch on the lower part of the side; mesonotum with the anterior two-thirds clothed with shining light-yellow scales, a dark patch in front of the sides, posterior portion varied with blackish and pale yellow scales, a patch at the side separated by a yellow stripe running from the middle to the base of the wing; scutellum yellow scaled; pleura dark, with patches of white scales; mesonotum deep brown, nude; abdomen black scaled above, with median basal elongate creamy spots on all the segments, which, however, do not unite to form a stripe, segments with lateral triangular basal white patches, beneath the abdomen is mostly creamy-white with black apical lateral triangular marks; legs black, knees yellow scaled, tarsi with narrow yellowish-white basal rings, the ring at the base of the second tarsal of the hind legs slightly involves the apex of the first joint; fork-cells rather short, scales of the veins all dark; claws of front and mid legs toothed, of hind legs simple.

*Length.*—5 mm.

♂. Palpi slightly shorter than proboscis, hairy on the apical portion, the two apical segments light ringed at their bases; abdomen with distinct basal white bands on the second to the fourth segments, on the succeeding segments broken into three spots, the median spot becoming elongate on the sixth and seventh segments, lateral cilia abundant, pale.

*Length.*—4 mm.

Five specimens, Chagres River, Panama (A. Busck), bred from larvae in pot holes along the river.

Apparently nearly allied to *Danielsia tripunctata*, Theobald, and to *Danielsia mediomaculata*, Theobald, abdominal marking differing from the former and the thoracic marking from the latter. We would place *Danielsia*, Theobald, as a synonym of *Aedes* in our classification."

## APPENDIX.

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The majority of the insects recorded here have been more or less described by Dyar and Knab. In many cases the descriptions are too incomplete to enable one to identify them.

Miss Ludlow sends the description of two new species, which I have also incorporated at her request.

This appendix has been mostly compiled by Mr. H. F. Carter.

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### Genus ANOPHELES. Meigen.

*Anopheles vestitipennis.* Dyar and Knab (1906).

Proc. Biol. Soc. Wash. XIX., 136 (1906).

"Tarsi banded with white, the hind tarsi black and white, both tarsi and femora speckled; wing veins black scaled with many little yellow patches.

Twenty-three specimens; Trece Aguas, Alta Vera Paz, Guatemala, April 7 to 14, 1906 (Schwarz and Barber); Polochic River, Guatemala, May 1, 1906 (Schwarz and Barber); Panzos, Guatemala, June, 1904 (O. F. Cook), March 23, 1906 (Schwarz and Barber); Nantha, Mexico (A. Dugès); Palizada, Mexico (A. Dugès); Cayamas, Cuba, May 22, 'in the house' (E. A. Schwarz).  
*Type* in U.S. Nat. Mus."

*Anopheles strigimacula.* Dyar and Knab (1906).

Proc. Biol. Soc. Wash. XIX., 136 (1906).

"Tarsi banded with white, the hind tarsi black and white, both tarsi and femora speckled; wing veins white with black dots and spots; third vein with a small black dot at the base or beyond; wing scales narrow; tarsi black and white, not yellow; no distinct costo-apical black spot on wing, but last vein with three black dashes.

One specimen; Cordoba, Mexico.

*Type* in U.S. Nat. Mus."

*Anopheles apicimacula.* Dyar and Knab (1906).

Proc. Biol. Soc. Wash. XIX., 136 (1906).

"As in *A. strigimacula*, Dyar and Knab, but with a distinct black costo-apical spot on wing.

Twenty-six specimens; Livingston, Guatemala, May 11, 1906 (S. Barber); Cordoba, Mexico (F. Knab); Colon, Panama (A. I. Kendall); Trinidad, B.W.I. (F. W. Urich).

*Type* in U.S. Nat. Mus."

*Anopheles punctimacula.* Dyar and Knab (1906).

Proc. Biol. Soc. Wash. XIX., 136 (1906).

"As in *A. strigimacula*, Dyar and Knab, but the last vein with a row of black dots.

One specimen; Colon, Panama, February 2, 1904 (W. M. Black).

*Type* in U.S. Nat. Mus."

#### Genus *NYSSORHYNCHUS*. Blanchard.

*Nyssorhynchus bozasi.* Neveu-Lemaire (1905).

Ditteri Eritrei, Bezzi, pt. ii., 4 (1908).

*Locality.*—Central Africa.

#### Genus *MEGARHINUS*. Robineau-Desvoidy.

*Megarhinus superbus.* Dyar and Knab (1907).

*Megarhinus haemorrhoidalis.* Osten-Sacken (non Fab.).

Journ. N. York Ent. Soc. XV., 12 (1907); Wash. Smithson. Misc. Coll., 50, p. 255 (1907).

*Megarhinus lynchi.* Dyar and Knab (1907).

*Megarhinus haemorrhoidalis.* Lynch (non Fab.).

Wash. Smithson. Misc. Coll., 50, 244 (1907).

*Megarhinus montezuma.* Dyar and Knab (1907).

Wash. Smithson. Misc. Coll., 50, 251 (1907).

*Locality.*—Central America.

*Megarhinus trinidadensis.* Dyar and Knab (1907).

Wash. Smithson. Misc. Coll., 50, 252 (1907).

*Locality.*—Trinidad.

*Megarhinus haitiensis.* Dyar and Knab (1907).

Wash. Smithson. Misc. Coll., 50, 253 (1907).

*Locality.*—San Domingo.

*Megarhinus guadeloupensis.* Dyar and Knab (1907).

Wash. Smithson. Misc. Coll., 50, 254 (1907).

Locality.—W. Indies.

*Megarhinus septemtrionalis.* Dyar and Knab (Sept. 1906).

*Megarhinus herrickii.* Theobald (Nov. 1906).

Vide Journ. N. York Ent. Soc. XV., 12 (1907).

Genus *JANTHINOSOMA.* Arribalzaga.

*Janthinosoma vanhalli.* Dyar and Knab (1906).

Proc. Biol. Soc. Wash. XIX., 134 (Sept. 1906).

"Hind legs with outstanding scales; thorax golden yellow scaled above; no blue spot on the last two abdominal segments below; else as in *J. sayi*, Dyar and Knab.

Seven specimens, Paramaribo, Surinam (Dr. Van Hall, through U.S. Dept. Agriculture).

Type in U.S. Nat. Mus."

*Janthinosoma champerico.* Dyar and Knab (1906).

Proc. Biol. Soc. Wash. XIX., 134 (1906).

"Hind legs with raised scales; last two joints of hind tarsi white; abdomen all yellow scaled below; else as in *J. lutzii*, Theobald.

One specimen, Champerico, Guatemala (F. Knab).

Type in U.S. Nat. Mus."

*Janthinosoma coffini.* Dyar and Knab (1906).

Proc. Biol. Soc. Wash. XIX., 134 (1906).

"Hind legs without raised scales; tarsi without pale basal bands; penultimate joint of hind tarsi white, the last dark; thorax all yellow scaled above; tips of mid and hind femora dusky. Agrees with the description of *J. varipes*, Coquillett, but a careful examination of the types of that species shows there to be dark scales on the centre of the thorax and that it is a synonym of *J. discrucians*, Walker, as identified by Coquillett.

Eight specimens, Nassau, Bahamas, B.W.I. June 22, 1903 (T. H. Coffin).

Type in U.S. Nat. Mus."

*Janthinosoma floridense.* Dyar and Knab (1906).

Proc. Biol. Soc. Wash. XIX., 135 (Sept. 1906).

"As in *J. texanum*, Dyar and Knab, but the thorax violet blue. The pale abdominal bands are powdery, interrupted dorsally and

confused; the general colour including the wings is dark, and the third vein has scale tufts throughout its length, instead of at base only.

105 specimens, Tampa, Kissimmee, Sanford, Arcadia Bartow, Pokatee, Alligator Creek, Florida (Dyar and Caudell).

*Type* in U.S. Nat. Mus."

*Janthinosoma toltecum.* Dyar and Knab (1906).

Proc. Biol. Soc. Wash. XIX., 135 (Sept. 1906).

"As in *J. floridense*, Dyar and Knab, but the pale abdominal bands are extensive, broken only on the last segment, the scales on the scutellum have a silvery lustre.

Eighty-nine specimens, Tehuantepec, Salina Cruz, Ruicon, Antonio, Santa Lucrecia, Almoloya, Mexico (F. Knab); Vera Cruz, Mexico (G. E. Beyer); Dallas, Texas, Sept. 14 (W. E. Hinds).

*Type* in U.S. Nat. Mus."

*Janthinosoma columbiae.* Dyar and Knab (1906).

Proc. Biol. Soc. Wash. XIX., 135 (Sept. 1906).

"As in *J. toltecum*, Dyar and Knab, but the abdomen more strongly pale scaled, the third vein with the broad scales in a basal dot only, the scutellum without silvery lustre.

Fifty-nine specimens, Grassymead (H. G. Dyar); Del Ray and St. Elmo, Va. (F. C. Pratt); Woodstock, Va. (J. Kotinsky); Delair, N.J. (W. P. Seal); Cold Spring Harbour, N.Y. (F. E. Lutz); Greensboro, N.C. (F. C. Pratt); Tutuila, Jackson, Belzoni, Clarksdale, Corbin, Yazoo City, Miss. (H. S. Barber); Agricultural College, Miss. (G. W. Herrick); Baton Rouge, La. (T. A. Morgan).

*Type* in U.S. Nat. Mus."

*Janthinosoma insularius.* Dyar and Knab (1906).

Proc. Biol. Soc. Wash. XIX., 135 (Sept. 1906).

"Hind legs without raised scales; tarsi with pale bands; first hind tarsal joint without a white ring; wing with whitish and dark scales intermixed; legs pale, the yellowish scales predominating, else as in *J. pygmaeus*, Theobald.

Eight specimens, Santo Domingo, W.I. (A. Busck).

*Type* in U.S. Nat. Mus."

*Janthinosoma schwarzi.* Dyar and Knab (1906).

Proc. Biol. Soc. Wash. XIX., 135 (1906).

"As in *J. coffini*, Dyar and Knab, but the tips of the hind femora are pure white.

One specimen, Cayamas, Cuba, May 7 (E. A. Schwarz.).

*Type* in U.S. Nat. Mus."

*Janthinosoma texanum.* Dyar and Knab (1906).

Proc. Biol. Soc. Wash. XIX., 135 (1906).

"Hind legs without raised scales; tarsal joints with pale basal bands; first hind tarsal joint with a narrow white ring; thorax golden-brown; white ring of the first hind tarsal joint one-third or more as broad as the joint. Else as in *J. jamaicensis*, Theobald.

Seven specimens, Brownsville, Texas, May 21, 1904 (H. S. Barber).

*Type* in U.S. Nat. Mus."

Genus PSOROPHORA. Robineau-Desvoidy.

*Psorophora virescens.* Dyar and Knab (1906).

Proc. Biol. Soc. Wash. XIX., 133 (1906).

"Close to *P. howardii*, Coquillett, but the abdomen above metallic green shining instead of blue. The species is also somewhat smaller.

Thirty-five specimens; Almoloya, Acapuleo, Tehuantepec, Salina Cruz, Mexico; Puntarenas, Costa Rica (F. Knab); Manzanillo, Mexico (A. Dugès); Monterey, Mexico (J. Goldberger).

*Type* in the U.S. Nat. Mus."

*Psorophora saeva.* Dyar and Knab (1906).

Proc. Biol. Soc. Wash. XIX., 133 (Sept. 1906).

"Black with blue reflection, the legs with dense, short, outstanding scales; tips of posterior femora white. Whitish scales on sides of head and a line at least on thorax, but this is denuded. Wings smoky-blackish.

Three specimens; Trinidad, B.W.I. (F. W. Urich); Trinidad, June (A. Busck).

*Type* in the U.S. Nat. Mus."

*Psorophora iracunda.* Dyar and Knab (1906).

Proc. Biol. Soc. Wash. XIX., 133 (Sept. 1906).

"Black with metallic-blue lustre, the legs with abundant outstanding scales, long and squamose. Posterior femora slightly greyish at tip. Wings smoky clouded.

Five specimens; Puntarenas, Costa Rica (F. Knab).

*Type* in U.S. Nat. Mus."

Genus STEGOCONOPS. Lutz (1906?).

Os Culicideos do Brazil, 34 (1908), Peryassu.

"Eyes and scutellum normal. Legs normal without irregular scales. Head ordinarily clothed with flat scales, and also with small

areas of narrow-curved and upright forked scales. Scutellum with spindle-shaped scales. Abdomen compressed laterally."

#### TABLE OF SPECIES:—

1. Principal colours white and dark blue. A median silvery-white line on the mesonotum *leucomelas*. Lutz.
2. First fork-cell shorter than its stem; posterior cross-vein its own length from the mid ..... *capricornii*. Lutz.

*Stegoconops leucomelas*. Lutz (1906).

*Haemagogus leucomelas*. Lutz (1904).

Mosq. do Brazil, p. 13 (1904), Bourroul; Os Culicideos do Brazil, 169 (1908); Mono. Culicid. IV., 551 (1907), Theobald; Imprensa Medica, p. (?), (1906).

*Locality*.—Brazil (Dr. Lutz).

*Stegoconops capricornii*. Lutz (1906).

*Haemagogus capricornii*. Lutz (1904).

Os Culicideos do Brazil, 172 (1908); Mono. Culicid. IV., 551 (1907), Theobald; Imprensa Medica, p. (?), (1906).

*Locality*.—Brazil (Dr. Lutz).

#### Genus GUALTERIA. Lutz (1904).

Mosq. do Brazil, 47–54 (1904), Bourroul; Mono. Culicid. IV., p. 552 (1907); Os Culicideos do Brazil, 35 (1908), Peryassu.

"Eyes and scutellum normal. Legs normal without irregular scales. Head with curved spindle-shaped scales, flat scales on the sides and upright forked scales in the middle of the occiput. Scutellum with narrow compressed spindle-shaped and spatulate scales."

#### TABLE OF SPECIES.

1. Mesonotum black and white ..... *oswaldi*. Lutz.
2. Mesonotum brown and gold ..... *fulvithorax*. Lutz.
3. Front part of mesonotum whitish-yellow; legs with grey bases and white apices. Upper surface of abdomen with a clear uninterrupted line down the middle ..... *fluvialis*. Lutz.

*Gualteria oswaldi*. Lutz (1904).

Mosq. do Brazil, pp. 47, 66 (1904), Bourroul; Mono. Culicid. IV., p. 552 (1907); Os Culicideos do Brazil, p. 177 (1908).

*Locality*.—Brazil (Dr. Lutz).

*Gualteria fulvithorax.* Lutz (1904).

Os Culicideos do Brazil, p. 179 (1908); Mono. Culicid. IV., p. 552 (1907).

*Locality.*—Brazil (Dr. Lutz).

*Gualteria fluviatilis.* Lutz (1908).

*Culicada fluviatilis.* Lutz.

*Culex fluviatilis.* Lutz.

Mosq. do Brazil, p. 42, 72, and 77 (1904), Bourroul; Mono. Culicid. IV., 342 (1907); Os Culicideos do Brazil, p. 181 (1908).

*Locality.*—Brazil (Dr. Lutz).

Genus STEGOMYIA. Theobald.

*Stegomyia brumpti.* Neveu-Lemaire (1906).

Ditteri Eritrei, pt. ii., 4 (1908), Bezzi.

*Locality.*—Harrar.

*Stegomyia (?) periskelata.* Giles (1902).

Handbk. Gnats, 2nd edit., 372 (1902); Mono. Culicid. II., 316 (1901), and III., 145 (1903), Theobald.

The type of this does not seem to exist. Its position cannot be ascertained from the description, and it had best be erased from the list of authentic species.

*Locality.*—Shahjahanpur, N.W. Provinces, India.

*Stegomyia brevipalpis,* Giles (1902), is a *Culex.* *Vide* Genus *Culex.*

*Stegomyia (?) pipersalata.* Giles (1902).

Handbk. Gnats, 2nd edit., 372 (1902); Mono. Culicid. II., 316 (1901), Theobald.

*Locality.*—Jhansi, Gonda, N.W. Provinces, India.

This cannot be a *Stegomyia*, as the head has mouse-coloured long narrow scales, according to Giles. Carter has examined the type, and says, however, it may be a *Stegomyia*. The type is in the British Museum. No *Stegomyia* I have seen has mottled wings.

*Stegomyia (?) microptera.* Giles.

*Culex microptera.* Giles.

*Wyeomyia microptera.* Giles.

Originally described by Giles as a *Wyeomyia*, then moved to a totally distinct genus *Stegomyia*. The actual type seems to have been lost.

*Pardomyia quadripunctis.* n. sp. Ludlow.

" ♀.—Head yellowish-brown, with a small dark median spot in the chitin on the occiput, covered with slender orange-coloured curved and forked scales, a few paler very small flat lateral scales, and orange and brown bristles, the colour sometimes changing with the direction of the light, so that the same bristle may be either light or brown, and some bristles apparently orange at base and brown towards the tip; antennae, basal joint orange with a few small flat yellow scales, second joint and part of third also light, the remainder brown, verticels brown, pubescence yellow or whitish; palpi heavily covered with orange-coloured scales, the small ultimate joint and the apex of the penultimate dark brown, and a band of markedly outstanding brown scales at the apex of the antepenultimate; proboscis is brown at the very base, then dorsally brown and orange scales intermixed, so it is a dusky orange, ventrally pure orange, and therefore a bright yellow, a dark band at the apex and the labellae brownish-orange; there are brown hairs rather plentifully scattered the whole length of the proboscis; eyes dark reddish-brown, contiguous; clypeus dark orange. Thorax orange-brown; there are dark spots in the chitin which give a more or less uneven colouring to the mesonotum, but it and the prothoracic lobes are covered with deep orange-coloured slender curved scales. The bristles on the prothoracic lobes orange and brown, at the wing joints orange; scutellum dark, the mid lobe covered mostly with brown slender curved scales, a very few yellow ones, the lateral lobes with orange scales, mid lobe border bristles are gone, but were eight, those on the lateral lobes are orange; pleura brown with about six bunches of flat orange-coloured scales; metanotum nude, a soft whitish-orange colour.

Abdomen with brown chitin darker on the apical portions so as to suggest dark apical bands not found in the scales. The scales are long spatulate flat scales not like the usual *Culex* scaling. First segment dark; on the second segment the scales are intermingled orange and brown with a suggestion of two sub-median orange spots and a narrow basal pale band. Third much the same but the sub-median spots more definite and no pale basal band. Fourth like third, with the sub-median spots not so definite. Fifth, orange with narrow basal brown band. Sixth, orange with a few scales apparently orange at base and brown tipped. Eighth, brown scaled, and the cerci are also dark. All the apical hairs are orange or brown as the direction of the light changes, and this is probably true of some of the scales too, though those with orange bases and brown tips could not be seen to change much. Venter with orange basal bands widening on the distal segments so they cover nearly the whole segment.

Legs, coxae and trochanters with dark brown scales; femora all markedly mottled with orange and brown spots; tibiae light at base and mottled, but slightly darker than femora, the fore-legs having a

dark band near the apex, but the very tip light, the others with dark apex. First tarsal on fore and mid legs faintly mottled but mostly orange-coloured, the following joints have mixed orange and brown scales; the second joint light at the base but growing darker, and the remaining joints all darker—dusky orange—those of the fore-leg slightly the darker. Ungues on both uniserrate. On the hind leg the first and second tarsals have narrow pale basal bands, otherwise they are quite dark. The following joints missing.

Wing membranes yellowish, veins orange, sparsely clothed with small very dark brown and yellow scales, the latter mostly on the costa, sub-costa and first long vein, except at the bases which are dark, very few on the third, and practically absent on the fifth and sixth. There are four dark spots on the wing, first at the humeral cross-vein an aggregation of dark scales, second, a little proximal of the junction of the sub-costa and costa a dark spot in the membrane, where oddly enough there is a short incrasation joining the sub-costa to the first long vein, third, at the root of the second long vein, spot in membrane, and a (fourth) and much larger spot at the root of the third vein, a spot in membrane extending in a line with the cross-vein from the upper fork of the fifth to the first long vein. First sub-marginal cell longer and narrower than second posterior, its base a little exterior to that of the latter. The cells are comparatively short, the stems of each being considerably longer than the cells; the cross-veins meet almost in a line, the mid and posterior being about the same length and longer than the supernumerary. The costa is much the most yellow-scaled of the veins, and it and the first long vein are nearly pure orange colour at their apices. Halteres with light stems and dark knobs.

*Length*.—About 7 mm., without proboscis.

*Habitat*.—Parang, Mindanao, P.I.

Taken Oct. 26.

Described from one specimen sent by Major Page, Med. Corps, U.S. Army. It lies very near Theobald's *aurantia*, and except for the additional and rather curious wing spot I should think it probably a variation of his species.—C. S. L."

#### Genus HOWARDINA. Theobald.

*Howardina aureostriata*. Grabham (1906).

Canad. Ent. XXXVIII., 171 (1906).

"♀. Proboscis black and slender, curved downwards, rather long and narrow, three-quarters the length of the abdomen. Palpi black, extremity of terminal joint golden scaled, a few golden scales on the upper median surface of the penultimate joint; under surface of palpi speckled with golden scales. Antenna black, scattered golden scales throughout its length, especially on the lower joints; about three-

quarters length of proboscis. Clypeus black; a narrow median band of golden scales on the centre of the occiput, two broad bands of golden scales on each side of the occiput, the intervening spaces black scaled; a number of upright forked scales on the nape; scales on the extreme sides of the head silvery.

Thorax black, scaled with seven rows of brilliant narrow-curved golden scales, the outermost pair starting from the wing insertions, curving round and bordering the mesonotum laterally and anteriorly; the next pair arise from the preceding near the anterior border of the mesonotum, and run backwards, terminating in the lateral lobes of the scutellum; the innermost pair also originate anteriorly and course backwards gradually narrowing over three-quarters the length of the mesonotum. The seventh row arises in the hinder third of the mesonotum and terminates on the posterior margin of the mid lobe of the scutellum. Prothoracic lobes with brilliant silvery scales. Patches of silvery scales on the pleura. Scutellum with a median and two lateral bands of golden scales. Three long hairs on each of the lateral lobes and four on the centre lobe.

Wings with pale brown scales, the lateral ones long and narrow, median ones short and oboconical. First sub-marginal cell narrower and a third of its length longer than the second posterior, its stem less than one-half the length of the cell; stem of second posterior as long as the cell; posterior cross-vein more than its own length behind the middle cross-vein. Halteres with white stems and brown knobs.

Abdomen, black scaled with violet reflections; first four segments with basal bands of golden scales; all segments apically bordered with long white hairs. Triangular patches of silvery scales on sides of segments, extending ventrally a short distance. Venter with broad basal bands of golden scales on all segments except the last two.

Legs black, with violet reflections, speckled with golden scales, especially towards the extremities; femora golden scaled on under surface throughout their whole length, upper surface golden scaled near base, a few silvery scales at the apices above forming three spots, especially on the mid and hind legs. Tibiae unbanded in all the legs. A narrow white basal band on the mid metatarsi. Broad basal band of silvery-white scales on the metatarsi and first two tarsi of the hind legs. Ungues equal and simple.

*Length.—2·5 mm.*

♂. Palpi black, very long and narrow extending about one quarter of their length beyond proboscis, three long black hairs at the extremities of the terminal joints, a few on the sides of the penultimate and at the extreme apices of the antepenultimate joints; a few golden scales at the junction of the terminal and penultimate joints; a conspicuous band of golden scales at the lower third of the antepenultimate joint. Shaft of the antenna conspicuously golden scaled. The median band of golden scales on the occiput is divided into two

by a line of black scales. Abdomen black, segments with long white hairs along the apical borders; all segments with silvery lateral areas; in the last three segments these nearly meet dorsally, forming basal bands. Venter with broad basal bands of silvery scales, among which are a few golden scales along the mid line. Ungues of fore leg unequal, larger biserrate and the smaller uniserrate; of the mid leg, larger biserrate and the smaller uniserrate; of the hind leg simple and equal.

*Length.*—2·5 mm.

Sent by Colonel Loscombe in Sept. 05."

A description of the adult larva was also given.

*Howardina inaequalis.* Grabham (1907).

Canad. Ent. XXXIX., 25 (1907).

"Near *H. aureostriata*, Grabham (Can. Ent., May 1906), but with somewhat broader thoracic lines. The face hairs of the larva are as follows: ante-antennal hair five- to eight-rayed, upper epistomal hair double, lower about ten-rayed. The compound hair of the dorsal group in the terminal segment is about six-rayed. In *H. aureostriata* the upper epistomal hair is usually single, and the compound hair of the dorsal group on the terminal segment is ten- to twelve-rayed. The most notable differences are to be observed in the anal gills, those of *H. inaequalis* being broadly lanceolate and pigmented, the lower pair only half the length of the upper pair, which are one-third of the longest hairs of the ventral hair group, while in *H. aureostriata* they are nearly equal size, narrow, slender and transparent, and about as long as the hairs of the ventral tuft. The larvae collected from hollow trees (chiefly *Anona palustris*) by the sea-shore, Kingston, have long, slender pale red bodies covered with rayed hairs; a pair of large air vessels in the thorax are seen as two conspicuous silvery spots. The females are troublesome blood-suckers in the woods.

*Length of adult 2·5 mm.*"

#### Genus CULISETA. Felt.

*Culiseta maccrackenae.* Dyar and Knab (1906).

Proc. Biol. Soc. Wash. XIX., 133 (1906).

*Locality.*—California.

*Culiseta dugesii.* Dyar and Knab (1906).

Proc. Biol. Soc. Wash. XIX., 134 (1906).

*Locality.*—Mexico.

## Genus CULEX. Linn.

*Culex pallidocephala.* Grossbeck.

"A light coloured medium sized species, with creamy coloured unbanded legs, brownish unbanded beak and silvery-grey unbanded abdomen. Wings unspotted. Thorax pale brown, marked with darker scales on the sides of a narrow median groove, and enclosed in a semicircular lateral line on the posterior half."

United States.

I have the above description, but I cannot trace the reference.  
—F. V. T.

*Culex knabi.* Coquillett.

Proc. Ent. Soc. Wash. VII., 4, 183 (1906).

United States.

*Culex bracteatus.* Coquillett (1906).

Proc. Ent. Soc. Wash. VII., 4, 184 (1906).

United States.

*Culex saxatilis.* Grossbeck (1906).

Rep. Ent. Dept. N. Jersey Agri. Coll. Exp. St., 685 (1906); Canad. Ent. XXXVIII., 360 (1906).

"Just like *C. geniculatus*, but the palpi of the ♀ all brown.  
Taken at Ganet, Mt. Paterson."

*Culex pallidohirta.* Grossbeck (1906).

Rep. Ent. Dept. N. Jersey Agri. Coll. Exp. St., 679 (1906); Canad. Ent. XXXVIII., 359 (1906).

United States.

*Culex sylvicola.* Grossbeck (1906).

Canad. Ent. XXXVIII., 129 (1906); Rep. Ec. Dept. N. Jersey Agri. Exp. St. for 1905, 677 (1906), Smith.

"Found in swampy woods near New Brunswick. Larvae and pupae in April and May. Adults in May erroneously identified as the Pacific Coast *squamiger*."

*Culex insatiabilis.* Bigot (1859).

Ann. d. l. Soc. Entom. de France (3) VII., 118 (1859).

Madagascar.

"♂ antennis plumosis. Palpis haustello aequalibus, nudis, albo-biannulatis. ♀ antennis verticillatis. Palpis haustello brevioribus,

nudis. ♂ griseus. Thorace lineis duabus apice divergentibus, utrinque macula lata nigra. Abdomine fusco annulato. Pedibus obscure fuscis, femoribus tibiisque basi pallidis, tarsis nigris albo-quinque annulatis. Alis griseis, ad costam obscurioribus."

*Culex leucogrammus.* Loew (1874).

Zeit. für. die ges. Naturwiss. (2) IX., 413 (1874).

Locality.—Nord de la Perse (Shahrud).

"Ex fusco cervinus, thorace albo-lineato, abdominis segmentis fascia basali albo-tomentosa et macula media luteo-tomentosa ornatis, pedibus nigris tomento albo sparsis tarsorumque articulis tribus primis in basi albo-annulatis, margine venisque alarum brevius et aequaliter subfusco squamulatis.

Long.—5-6 mm."

*Culex basilicus.* Dyar and Knab (1906).

Proc. Biol. Soc. Wash. XIX., 169 (1906).

Locality.—Trinidad.

*Culex consolator.* Dyar and Knab (1906).

Proc. Biol. Soc. Wash. XIX., 170 (1906).

Locality.—Trinidad.

*Culex carmodyae mollis.* Dyar and Knab (1906).

Proc. Biol. Soc. Wash. XIX., 171 (1906).

"Differs from *C. carmodyae*, Dyar and Knab, in having narrow white basal bands on the tarsi."

Locality.—Trinidad.

*Culex lactator.* Dyar and Knab (March, 1906).

*Culex hassardi.* Grabham (May, 1906).

Proc. Biol. Soc. Wash. XIX., 170 (1906); Canad. Ent. XXXVIII., 167 (1906).

*Culex toweri.* Dyar and Knab (1907).

Journ. N. York Ent. Soc. XV., 13 (1907).

Locality.—Porto Rico.

*Culex fur.* Dyar and Knab (1907).

Journ. N. York Ent. Soc. XV., 13 (1907).

Locality.—Panama.

*Culex agitator.* Dyar and Knab (1907).

Journ. N. York Ent. Soc. XV., 100 (1907).

*Nov. nom. for Mochlostyrax cubensis,* Dyar and Knab.

*Culex ochropus.* Dyar and Knab (1907).

Journ. N. York Ent. Soc. XV., 100 (1907).

*Locality.*—New Hampshire.

*Culex taeniopus.* Dyar and Knab (1907).

Journ. N. York Ent. Soc. XV., 100 (1907).

*Locality.*—Nicaragua.

*Culex egberti.* Dyar and Knab (1907).

Journ. N. York Ent. Soc. XV., 214 (1907).

*Locality.*—Florida.

*Culex jubilator.* Dyar and Knab (1907).

Journ. N. York Ent. Soc. XV., 201 (1907).

*Locality.*—Panama.

*Culex revelator.* Dyar and Knab (1907).

Journ. N. York Ent. Soc. XV., 202 (1907).

*Locality.*—Panama.

*Culex leprincei.* Dyar and Knab (1907).

Journ. N. York Ent. Soc. XV., 202 (1907).

*Locality.*—Panama.

*Culex corrigani.* Dyar and Knab (1907).

Journ. N. York Ent. Soc. XV., 203 (1907).

*Locality.*—Panama.

*Culex equivocator.* Dyar and Knab (1907).

Journ. N. York Ent. Soc. XV., 203 (1907).

“Allied to *C. hesitator*, Dyar and Knab, but differing in shape of the wing scales.”

*Locality.*—Panama.

*Culex jenningsi*. Dyar and Knab (1907).

Journ. N. York Ent. Soc. XV., 203 (1907).

"Allied to *C. consolator*, Dyar and Knab."

*Locality*.—Panama.

*Culex gaudeator*. Dyar and Knab (1907).

Journ. N. York Ent. Soc. XV., 203 (1907).

"Near *C. imitator*, Theobald, but the thoracic markings less silvery and tarsal bands narrower."

*Locality*.—Panama.

*Culex hesitator*. Dyar and Knab (1907).

Journ. N. York Ent. Soc. XV., 204 (1907).

"Near *C. extricator*, Dyar and Knab, but banding of abdomen beneath differs."

*Locality*.—Panama.

*Culex stigmatosa*. Dyar (1907).

Proc. U.S. Nat. Mus. XXXII., 123 (1907).

*Locality*.—California.

*Culex erythrothorax*. Dyar (1907).

Proc. U.S. Nat. Mus. XXXII., 124 (1907).

*Locality*.—California.

*Culex azymus*. Dyar and Knab (1906).

Proc. Biol. Soc. Wash. XIX., 169 (1906).

"Near *C. pleuristriatus*, Theobald, but lacking the thoracic spotting and any trace of the white tarsal bands."

*Locality*.—Trinidad.

*Culex chrysonotum*. Dyar and Knab (1908).

U.S. Nat. Mus. Proc. 35, 57 (1908).

*Locality*.—Panama.

*Culex daumastocampa*. Dyar and Knab (1908).

U.S. Nat. Mus. Proc. 35, 58 (1908).

*Locality*.—Panama.

*Culex pinarocampa.* Dyar and Knab (1908).

U.S. Nat. Mus. Proc. 35, 59 (1908).

*Locality.*—Mexico.

*Culex costernator.* Dyar and Knab (1908).

U.S. Nat. Mus. Proc. 35, 59 (1908).

*Locality.*—Mexico.

*Culex stenolepus.* Dyar and Knab (1908).

U.S. Nat. Mus. Proc. 35, 60 (1908).

*Locality.*—Mexico.

*Culex aikenii.* Dyar and Knab (1908).

U.S. Nat. Mus. Proc. 35, 61 (1908).

*Locality.*—Dutch Guiana.

*Culex eumimetes.* Dyar and Knab (1908).

U.S. Nat. Mus. Proc. 35, 61 (1908).

*Locality.*—Mexico.

*Culex serratipes.* Becker (1908).

Berlin Mitt. Zool. Mus. 4, 78 (1908).

*Locality.*—Canaren.

*Culex auguste-alatus.* Becker (1908)

Berlin Mitt. Zool. Mus. 4, 79 (1908).

*Locality.*—Canaren.

*Culex albopalposus.* Becker (1908).

Berlin Mitt. Zool. Mus. 4, 80 (1908).

*Locality.*—Canaren.

*Culex arboricollis.* D'Emmerez (1908).

Ann. Trop. Med. 2, 257 (1908).

*Locality.*—Mauritius.

*Culex fowleri.* D'Emmerez (1908).

Ann. Trop. Med. 2, 258 (1908).

*Locality.*—Mauritius.

*Culex ronaldi.* D'Emmerez (1908).

Ann. Trop. Med. 2, 259 (1908).

*Locality.*—Mauritius.

*Culex drymoecius.* Speiser (1909).

Scientific results of the Swedish Zoological Expedition (1905–1906) in German East Africa, 42 (1909).

*Culex leucarthrius.* Speiser (1909).

Scientific results of the Swedish Zoological Expedition (1905–1906) in German East Africa, 43 (1909).

*Culex aegypti.* Linn. (1762).

Ditteri Eritrei, pt. ii., 4 (1908), Bezzi; Palastina-Reise, p. 470 (1762), Hasselquist.

*Locality.*—Egypt.

*Culex didieri.* Neveu-Lemaire (1906).

Ditteri Eritrei, pt. ii., 4 (1908), Bezzi.

*Locality.*—Congo.

*Culex pygmaeus.* Neveu-Lemaire (1906).

Ditteri Eritrei, pt. ii., 4 (1908), Bezzi.

*Locality.*—Imi, West Africa.

*Culex somaliensis.* Neveu-Lemaire (1906).

Ditteri Eritrei, pt. ii., 4 (1908), Bezzi.

*Locality.*—Somali.

*Culex zeltneri.* Neveu-Lemaire (1906).

Ditteri Eritrei, pt. ii., 4 (1908), Bezzi.

*Locality.*—Harrar.

*Culex cyanopennis.* Humboldt (1820).

Voyage aux rég. équin. (historique), VII., 119 (1820).

*Culex lineatus.* Humboldt (1820).

Voyage aux rég. équin. (historique), VII., 119 (1820).

*Culex ferox.* Humboldt (1820).

Voyage aux rég. équin. (historique), VII., 119 (1820).

*Culex chloropterus.* Humboldt (1820).

Voyage aux rég. équin. (historique), VII., 119 (1820).

*Culex maculatus.* Humboldt (1820).

Voyage aux rég. équin. (historique), VII., 119 (1820).

Genus **TAENIORHYNCHUS.** Arribalzaga.

*Taeniorhynchus africanus.* Neveu-Lemaire (1906).

Ditteri Eritrei, pt. ii., 4 (1908), Bezzi.

*Locality.*—Egypt.

*Taeniorhynchus corticula.* Dyar and Knab (1907).

Journ. N. York Ent. Soc. XV., 101 (1907).

*Locality.*—Panama.

*Taeniorhynchus pagei.* n. sp. Ludlow.

“ ♀.—Head dark brown covered with light curved scales on the occiput and around the eyes, white flat lateral scales, and many very dark brown, almost black forked scales on the occiput, dark brown bristles projecting forward between the eyes; antennae brown, verticels and pubescence brown, white unscaled bands at the joints, basal joint very dark brown; palpi very dark brown; proboscis dark brown showing blue iridescence in some lights; eyes dark brown; clypeus very dark brown.

Thorax dark brown; prothoracic lobes apparently nude except for brown bristles; mesonotum covered with light, brassy-yellow curved scales with two submedian dark (bare) lines, the intermediate space having the scales arranged in a definite order and extending back to the ‘bare’ space, the laterad scales also extending back on each side of the ‘bare’ space so as to suggest light lines. Near the wing joint these scales change colour with change of direction of light, being of this peculiar brassy-yellow in some lights and dark in others, but oftener dark; there are two large bunches of long brown bristles in the bare space and at the wing joint; pleura are dark brown with a few bunches of white flat scales; scutellum light brown with light curved scales and brown bristles; metanotum dark brown.

Abdomen dark brown densely covered with dark brown having marked blue iridescence, a tiny light yellowish median basal spot on the eighth segment, and small lateral white spots on most of the segments (3–6 inclusive), light hairs at the apices; venter yellowish basal bands extending laterally.

Legs: coxae and trochanters yellowish-white; femora all dorsally dark scaled, with blue iridescence, and ventrally silvery-white nearly

to the apex; tibiae all dark, as are all the tarsal joints of the hind and mid legs, though in some lights the reflection on the tarsi is light brown; the tarsal joints of the ♀ missing. Ungues simple.

Wing membrane is smoky and the veins heavily clothed with dark typical *Taeniorhynchus* scales; first submarginal cell slightly longer and narrower than second posterior; mid cross-vein and super-numerary meet and are about equal, posterior cross-vein about twice its length distant.

Halteres stem light, knob dark.

*Length*.—5-6 mm.

*Habitat*.—Parang, Mindanao, P.I.

Taken October 27.

♂ has been wet and in bad condition, but is much like the ♀; palpi as long as the proboscis, acuminate, plumose; the tarsal joints are unbanded and only one of the fore or mid unguis remains, that is uniserrate; hind unguis simple.

*Observations*.—Described from two females and one male sent by Major Page, Medical Corps, U.S. Army. It evidently lies near other described *Taeniorhynchi*, perhaps nearest to *tenax*, Theobald, but the legs are entirely unbanded, and the abdomen has only the one dorsal spot."

#### Genus MANSONIA. Blanchard.

*Mansonia phyllozoa*. Dyar and Knab (1907).

Journ. N. York Ent. Soc. XV., 199 (1907).

*Locality*.—Panama.

#### Genus MOCHLOSTYRAX. Dyar and Knab (1906).

Journ. N. York Ent. Soc. XIV., 223 (1906).

This genus is based on larval characters and appears to be closely allied to *Melanoconion*, Theobald.

*Mochlostyrax jamaicensis*. Grabham (1906).

Canad. Ent., XXXVIII., 318 (1906).

"The adults bear a strong superficial resemblance to the small swamp mosquito, *Melanoconion atratus*, Theobald."

#### Genus PNEUMACULEX. Dyar.

*Pneumaculex waverleyi*. Grabham (1907).

*Mansonia waverleyi*. Grabham (1907).

Canad. Ent., XXXIX., 25 (1907).

"Close to *Mansonia signifer*, Coquillett, but with an additional curved line of white scales on each side of the mesothorax."

*Signifer*, Coquillett, is not a *Mansonia* at all, so as this is allied to it I have placed it in the genus *Pneumaculex*.

Genus AEDES. Meigen.

*Aedes epaticus*. Dyar and Knab (1908).

U.S. Nat. Mus. Proc. 35, 53 (1908).

*Locality*.—W. Indies; Mexico; U.S.A.

*Aedes cuneatus*. Dyar and Knab (1908).

U.S. Nat. Mus. Proc. 35, 54 (1908).

*Locality*.—W. Indies; Mexico; U.S.A.

*Aedes argentescens*. Dyar and Knab (1908).

U.S. Nat. Mus. Proc. 35, 55 (1908).

*Locality*.—Mexico.

*Aedes haruspicus*. Dyar and Knab (1908).

U.S. Nat. Mus. Proc. 35, 55 (1908).

*Locality*.—Jamaica.

*Aedes horridus*. Dyar and Knab (1908).

U.S. Nat. Mus. Proc. 35, 56 (1908).

*Locality*.—United States (South).

*Aedes aldrichi*. Dyar and Knab (1908).

U.S. Nat. Mus. Proc. 35, 57 (1908).

*Locality*.—Idaho.

Genus AEDEOMYIA. Theobald.

*Aedeomyia africana*. Neveu-Lemaire (1906).

Ditteri Eritrei, pt. ii., 4 (1908), Bezzii.

*Locality*.—Douflè, Central Africa.

Genus JOBLOTIA. Blanchard.

*Joblotia (?) trichorryes*. Dyar and Knab (1907).

Journ. N. York Ent. Soc. XV., 206 (1907).

*Locality*.—Panama.

*Joblotia* (?) *mogilasia*. Dyar and Knab (1907).

Journ. N. York Ent. Soc. XV., 206 (1907).

*Locality*.—Panama.

Genus LESTICOCAMPA. Dyar and Knab (non. nud.) (1906).

This genus was founded on larval characters. The authors refer to this genus six species, but all I can see of the genus is that it is allied to *Runchomyia*, but differs in the absence of the conical frontal process.

"The species upon which the genus was founded appears to be now undescribed," the authors say. "It was identified by Coquillett and accepted by us as *Joblotia lunata*, Theobald."

A re-examination of the type *lunata* shows the clypeus not to be hairy as I pointed out in Vol. IV., p. 594 (1907), and as the genus *Trichoprosopon* must stand I placed this species in Blanchard's genus *Joblotia* (1901), this name must consequently supersede Dyar and Knab's *Lesticocampa*.

*Lesticocampa rapax*. Dyar and Knab (1906).

Proc. Biol. Soc. Wash. XIX., 137 (1906).

"♂.—Head clothed with dull violet scales behind, with a row of black erect forked scales; thorax with dull brown scales with faint purple reflection; pleurae and coxae silvery; abdomen with steel-blue, violaceous in certain lights, the first segment with brighter blue, scales, eighth with bright violet scales, golden at the sides; venter golden; last segment with bright violet-blue scales with numerous bristles below. Legs entirely blue-violet. Palpi longer than antennae, upcurved.

♀.—Similar to the male, palpi short, as long as four joints of the antennae.

One ♂, Trinidad, B.W.I. (F. W. Urich), bred from larvae described as *L. lunata*, Theobald (Dyar and Knab, Jour. N. York Ent. Soc. XIV., 226, 1906); three ♀'s, Sao Paulo, Brazil (A. Lutz); Patulue, Guatemala (D. G. Eisen).

Type in U.S. Nat. Mus."

*Lesticocampa vonplesseni*. Dyar and Knab (1906).

Proc. Biol. Soc. Wash. XIX., 137 (1906).

"♀.—Head with dull indigo-blue scales behind; palpi as long as six joints of the antennae, black; thorax elongate, with sooty scales; abdomen dull blue above, golden below; legs black with blue reflection.

Four specimens; upper Pastazza River, Ecuador (Baron von Plessen, through Dr. M. Graham).

Type in U.S. Nat. Mus."

*Lesticocampa leucopus.* Dyar and Knab (1906).

Proc. Biol. Soc. Wash. XIX., 137 (1906).

"Palpi of ♀ as long as six joints of the antennae; hind tarsi white at tip."

Five specimens; Bluefields, Nicaragua (W. F. Thornton); Bocas del Toro, Panama (P. Osterhout).

*Type* in U.S. Nat. Mus."

*Lesticocampa ulopus.* Dyar and Knab (1906).

Proc. Biol. Soc. Wash. XIX., 137 (1906).

"Palpi of ♀ as long as six joints of antennae; mid and hind tarsi white at tip."

One specimen; Bluefields, Nicaragua (W. F. Thornton).

*Type* in U.S. Nat. Mus."

*Lesticocampa schedocydia.* Dyar and Knab (1908).

U.S. Nat. Mus. Proc. 35, 64 (1908).

*Locality.*—Nicaragua.

Genus *SABETHES.* Robineau-Desvoidy.

*Sabethes (?) canfieldi.* Dyar and Knab (1907).

Journ. N. York Ent. Soc. XV., 207 (1907).

*Sabethes (?) identicus.* Dyar and Knab (1907).

Journ. N. York Ent. Soc. XV., 207 (1907).

*Sabethes (?) tarsopus.* Dyar and Knab (1908).

U.S. Nat. Mus. Proc. 35, 62 (1908).

*Locality.*—Panama and Mexico.

*Sabethes (?) ochausi.* Dyar and Knab (1908).

U.S. Nat. Mus. Proc. 35, 63 (1908).

*Locality.*—British Guiana.

*Sabethes bipartipes.* Dyar and Knab (1906).

Proc. Biol. Soc. Wash. XIX., 136 (1906).

The authors give a few notes on this insect, which are insufficient for identification. But as far as one can judge it may be a (?) *Sabethes*. They say, "Legs, the middle pair with the second and outer third of first tarsal joints with a long flattened fringe, black, the apical half

of fringe of second segment creamy-white, the legs deep metallic-blue. Front and hind legs simple."

The authors say, "The same, or a similar species, has been described by Theobald as the male of *Sabethes nitidus* (Mono. Culicid. II., p. 347, 1901), but the type of *nitidus* is clearly the female there described, is referable to the section *Sabethoides*, in which the tarsi are not plumed, thus leaving the species nameless."

The male *nitidus* was referred to *Sabethes*, the female to *Sabethoides*, in Vol. III., p. 326 (1903). This of course antedates Dyar's note and *bipartipes*, if a (?) *Sabethes* at all, sinks as a synonym.

Genus PHONIOMYIA. Theobald.

*Phoniomyia (?) homotina*. Dyar and Knab (1906).

Proc. Biol. Soc. Wash. XIX., 141 (1906).

*Locality*.—Guatemala.

*Phoniomyia (?) simmsi*. Dyar and Knab (1908).

U.S. Nat. Mus. Proc. 35, 64 (1908).

*Locality*.—Panama.

Genus WYEOMYIA. Theobald.

*Wyeomyia vanduzeei*. Dyar and Knab (1906).

Proc. Biol. Soc. Wash. XIX., 138 (1906).

*Locality*.—Florida.

*Wyeomyia bromeliarum*. Dyar and Knab (1906).

Proc. Biol. Soc. Wash. XIX., 138 (1906).

"New name for larva described as *W. asullepta*, Theobald—adult too much damaged to be identified."

*Wyeomyia bahama*. Dyar and Knab (1906).

Proc. Biol. Soc. Wash. XIX., 138 (1906).

*Locality*.—Bahama Islands.

*Wyeomyia violescens*. Dyar and Knab (1906).

Proc. Biol. Soc. Wash. XIX., 138 (1906).

*Locality*.—Cuba.

*Wyeomyia minor.* Dyar and Knab (1906).

Proc. Biol. Soc. Wash. XIX., 138 (1906).

*Locality.*—Cuba.

*Wyeomyia guatemala.* Dyar and Knab (1906).

Proc. Biol. Soc. Wash. XIX., 139 (1906).

*Locality.*—Guatemala.

*Wyeomyia fratercula.* Dyar and Knab (1906).

Proc. Biol. Soc. Wash. XIX., 139 (1906).

*Locality.*—Martinique.

*Wyeomyia sorocula.* Dyar and Knab (1906).

Proc. Biol. Soc. Wash. XIX., 139 (1906).

*Locality.*—Santo Domingo.

*Wyeomyia pseudopecten.* Dyar and Knab (1906).

Proc. Biol. Soc. Wash. XIX., 139 (1906).

*Locality.*—Trinidad.

*Wyeomyia melanocephala.* Dyar and Knab (1906).

Proc. Biol. Soc. Wash. XIX., 140 (1906).

*Locality.*—Trinidad.

*Wyeomyia glaucocephala.* Dyar and Knab (1906).

Proc. Biol. Soc. Wash. XIX., 140 (1906).

*Locality.*—Santo Domingo.

*Wyeomyia adelpha.* Dyar and Knab (1906).

Proc. Biol. Soc. Wash. XIX., 140 (1906).

*Locality.*—Costa Rica.

*Wyeomyia galoa.* Dyar and Knab (1906).

Proc. Biol. Soc. Wash. XIX., 140 (1906).

*Locality.*—Guatemala.

*Wyeomyia chalcocephala.* Dyar and Knab (1906).

Proc. Biol. Soc. Wash. XIX., 140 (1906).

*Locality.*—Guatemala.

*Wyeomyia celaenocephala.* Dyar and Knab (1906).

Proc. Biol. Soc. Wash. XIX., 140 (1906).

*Locality.*—Guatemala.

*Wyeomyia espartana.* Dyar and Knab (1906).

Proc. Biol. Soc. Wash. XIX., 140 (1906).

*Locality.*—Costa Rica.

*Wyeomyia ochrura.* Dyar and Knab (1906).

Proc. Biol. Soc. Wash. XIX., 141 (1906).

*Locality.*—Trinidad.

*Wyeomyia agnóstips.* Dyar and Knab (1907).

Journ. N. York Ent. Soc. XV., 210 (1907).

*Locality.*—Panama.

*Wyeomyia homothe.* Dyar and Knab (1907).

Journ. N. York Ent. Soc. XV., 210 (1907).

*Locality.*—Panama.

*Wyeomyia hosantus.* Dyar and Knab (1907).

Journ. N. York Ent. Soc. XV., 210 (1907).

*Locality.*—Panama.

*Wyeomyia leucopisthepus.* Dyar and Knab (1907).

Journ. N. York Ent. Soc. XV., 210 (1907).

*Locality.*—Panama.

*Wyeomyia panamena.* Dyar and Knab (1907).

Journ. N. York Ent. Soc. XV., 209 (1907).

*Locality.*—Panama.

*Wyeomyia abascanta.* Dyar and Knab (1908).

U.S. Nat. Mus. Proc. 35, 65 (1908).

*Locality.*—Trinidad.

*Wyeomyia gynaecopus.* Dyar and Knab (1908).

U.S. Nat. Mus. Proc. 35, 65 (1908).

*Locality.*—Costa Rica.

*Wyeomyia ablechra.* Dyar and Knab (1908).

U.S. Nat. Mus. Proc. 35, 65 (1908).

*Locality.*—Salvadore.

*Wyeomyia ablakes.* Dyar and Knab (1908).

U.S. Nat. Mus. Proc. 35, 66 (1908).

*Locality.*—Mexico.

*Wyeomyia abebela.* Dyar and Knab (1908).

U.S. Nat. Mus. Proc. 35, 66 (1908).

*Locality.*—Mexico.

*Wyeomyia abia.* Dyar and Knab (1908).

U.S. Nat. Mus. Proc. 35, 67 (1908).

*Locality.*—Dominica.

*Wyeomyia andropus.* Dyar and Knab (1908).

U.S. Nat. Mus. Proc. 35, 68 (1908).

*Locality.*—Panama.

*Wyeomyia clasoleuca,* Dyar and Knab (1908).

U.S. Nat. Mus. Proc. 35, 68 (1908).

*Locality.*—Panama.

*Wyeomyia dymodora.* Dyar and Knab (1908).

U.S. Nat. Mus. Proc. 35, 68 (1908).

*Locality.*—Panama.

*Wyeomyia bana.* Dyar and Knab (1908).

U.S. Nat. Mus. Proc. 35, 69 (1908).

*Locality.*—Panama.

*Wyeomyia megalodora.* Dyar and Knab (1908).

U.S. Nat. Mus. Proc. 35, 69 (1908).

*Locality.*—Panama.

*Wyeomyia malaea.* Dyar and Knab (1908).

U.S. Nat. Mus. Proc. 35, 70 (1908).

*Locality.*—Salvador.

*Wyeomyia argyrura*. Dyar and Knab (1908).

U.S. Nat. Mus. Proc. 35, 70 (1908).

*Locality*.—Cuba.

Genus PROSOPOLEPIS. Lutz.

*Prosopolepis jocosa*. Dyar and Knab (1908).

U.S. Nat. Mus. Proc. 35, 64 (1908).

*Locality*.—Panama.

GENERA OF UNCERTAIN POSITION.

Genus LEPIDOSIA. Coquillett (1906).

Sci. XXIII., 314 (1906).

“Abdomen deep blue, except the first segment and a broad, usually interrupted band on the apices of the other segments, which are pale yellow or white.”

Hind feet black ..... *cyanescens*. Coquillett.  
Last hind segment white ..... *mexicanus*. Bellardi.

Genus ISOSTOMYIA. Coquillett (1906).

Class. Mosq. Te. Sc. II., U.S. Dep. Agri. 16 (1906).

Palpi of ♂ and ♀ less than one-fifth length of proboscis.

*Type*.—*I. perturbans*, Williston.

Genus TINOLETES. Coquillett (1906).

Proc. Ent. Soc. Wash. VII., 4, 185 (1906).

“Wing veins having outstanding scales, rather broad, oblanceolate; palpi of ♂ almost half, those of ♀ less than one-fifth as long as the proboscis.” *Tinoletes latisquama*. Coquillett.

Dyar and Knab founded such new genera as *Coelodiazeses* and *Mochlostyrax* on purely larval characters; the adults being unknown such names have not been adopted. The first named genus was, however, applied to *Anopheles barberi*, Coquillett, and we see no reason for separating it. In any case, the larval characters given will not hold.

## ADDENDA.



Add the following species :—

**KINGIA POLLINCTOR.** Graham (1910).

*Stegomyia pollinctor.* Graham (1910).

Anns. and Mag. Nat. Hist. Se. 8, V., 271 (1910).

West Africa.

*Type* in the British Museum.

**MYXOSQUAMUS PALUDOSUS.** Graham (1910).

Idem 270 (1910).

West Africa.

*Type* in the British Museum.

**CULEX PULLATUS.** Coquillett (1904).

Proc Ent. Soc. Wash. IV., 167 (1904).

Panama and Mexico.

*Type* in the National Museum, Washington, U.S.A.

**CULEX ALBOVIRGATUS.** Graham (1910).

Anns. and Mag. Nat. Hist. Se. 8, V., 264 (1910).

West Africa.

*Type* in the British Museum.

**CULEX GRAHAMII.** nov. nom.

*Culex pullatus.* Graham (1910), non Coquillett (1904).

Idem 265 (1910).

West Africa.

*Type* in the British Museum.

**CULEX AQUILUS.** Graham (1910).

Idem 266 (1910).

West Africa.

*Type* in the British Museum.

CULEX CALIGINOSUS. Graham (1910).

Idem 268 (1910).

West Africa.

Type in the British Museum.

CULEX LIVIDOCOSTALIS. Graham (1910).

Idem 269 (1910).

West Africa.

Type in the British Museum.

MEGACULEX PINCERNA. Graham (1910).

Idem 267 (1910).

West Africa.

Type in the British Museum.

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#### N O T E.

While this Volume has been passing through the press, a Paper by Mr. Theobald has appeared in the "Annals and Magazine of Natural History" for April, which ante-dates the following :—

Mon., pp. 203-5. *Aedimorphus punctothoracis*, A.M.N.H. (8), v, p. 374 (1910).

Mon., p. 367. *Culex nigrocostalis*, A.M.N.H. (8), v, p. 376 (1910).

Mon., p. 370. *Culex pallidothoracis*, A.M.N.H. (8), v, p. 377 (1910).

Mon., p. 416. *Pectinopalpus* (n. g.) *fuscus*, A.M.N.H. (8), v, p. 375 (1910).

S. F. H.

## ERRATA.

VOL. IV.



- Page 40. *Anopheles nigripes*. In references for Mono. Culicid. II.,  
*read I.*
- ,, 54. Genus Cycloppteron. For Mono. Culicid. III., pp. 58, *read p. 55.*
- ,, 99. *Nyssorhynchus fuliginosus*. In references for I., p. 122, *read I.*, p. 132.
- ,, 126. *Anopheles (?) minimus*. Reference, for I., p. 168, *read I.*,  
p. 186.
- ,, 163. Genus Desvoidya. In references for III., p. 383, *read III.*,  
p. 134.
- ,, 301. *Grabhamia puleritarsis*. In references for Mono. Culicid. II.,  
12. 5. 6., *read p. 56.*
- ,, 395. *Culex hirsutipalpis*. Reference, for Mono. Culicid. I., p. 379,  
*read I.*, p. 378.
- ,, 537. Genus *Aedes*. In references for III., p. 205, *read III.*, p. 285.
- ,, 585. Footnote. For Vol. III., p. 329, *read Vol. III.*, p. 319.
- ,, 593. *Trichoprosopon nivipes*. In references for III., p. 584, *read III.*, p. 334.
- ,, 627. Genus *Limatus*. In references for Mono. Culicid. II., p. 349,  
*read Mono. Culicid. II.*, p. 350.

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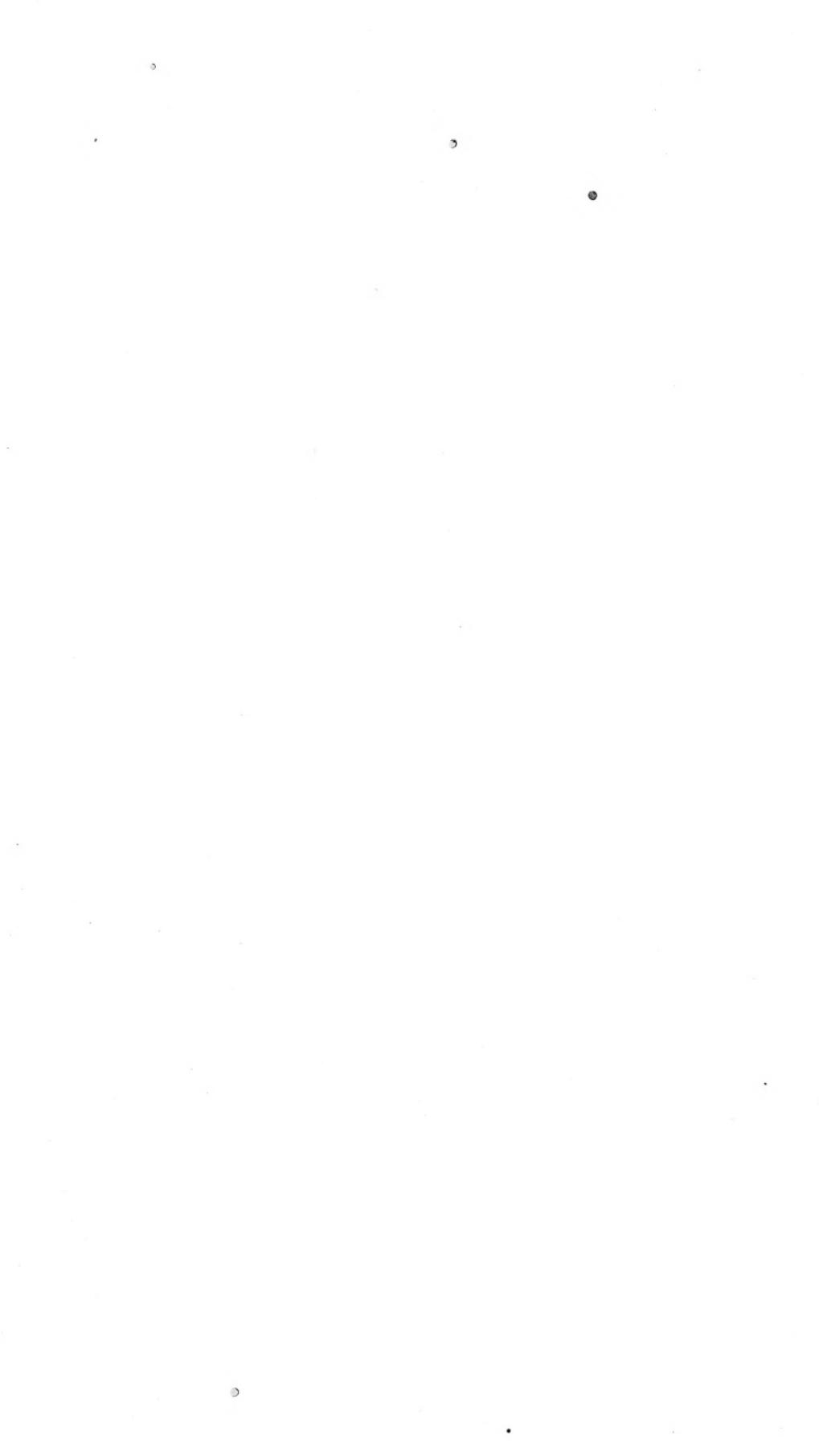
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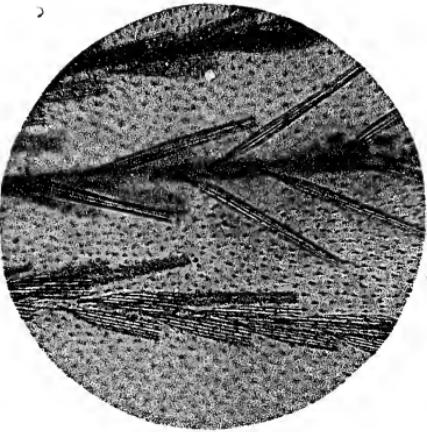




# Plate I.



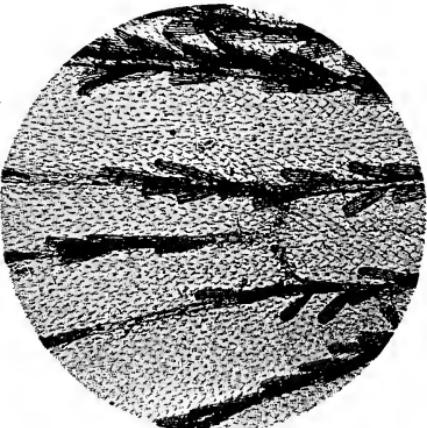
*Stegomyia wellmanii*, n. sp. ♀.



*Stegomyia albilateralis*, Theo. ♀.



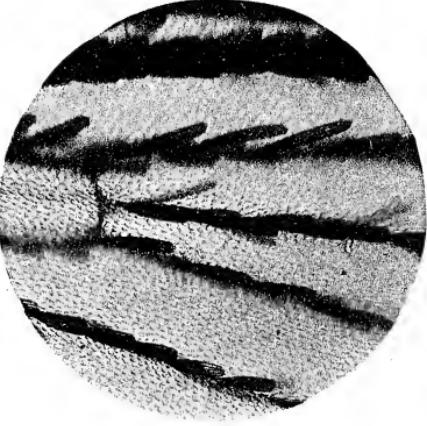
*Stegomyia tripunctata*, Theo. ♀.



*Reedomyia lowisii*, n. sp. ♂.



*Quasistegomyia dubia*, n. sp. ♀.

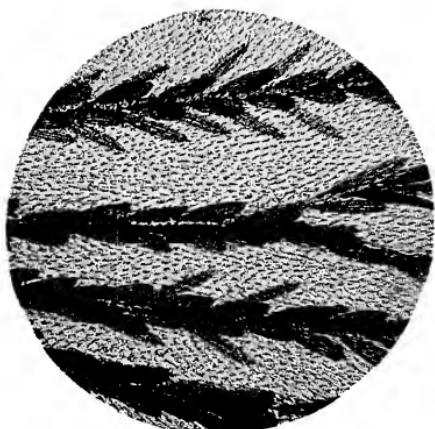


*Quasistegomyia dubia*, n. sp. ♂.

Wing Scales.



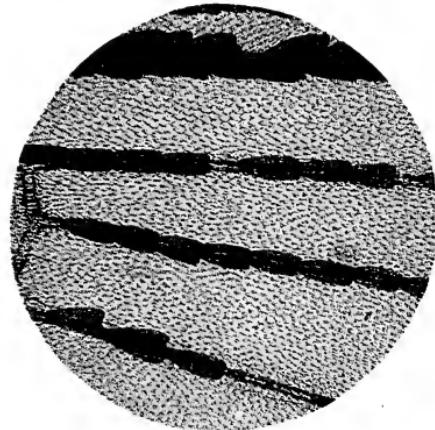
Plate II.



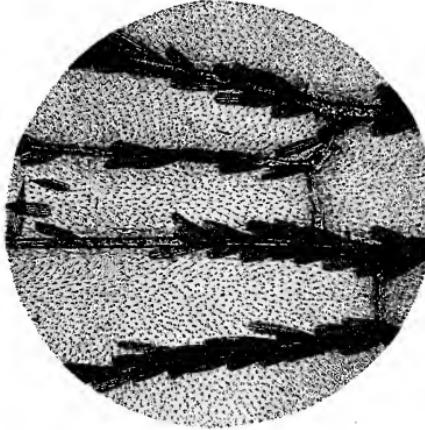
*Kingia luteocephala*. Newstead. ♂.



*K. luteocephala*. Newstead. ♀.



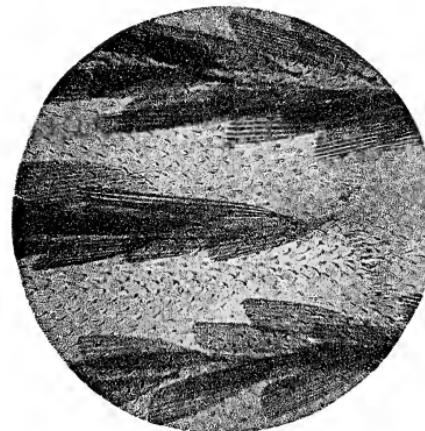
*Hispidimyia hispida*. n. sp. ♀.



*Pseudoskusea similis*. Theo. ♀.



*Protomacleaya alboventralis*. n. sp. ♀.



*Leicesteria apicalis*. Theo. ♀.

Wing Scales.

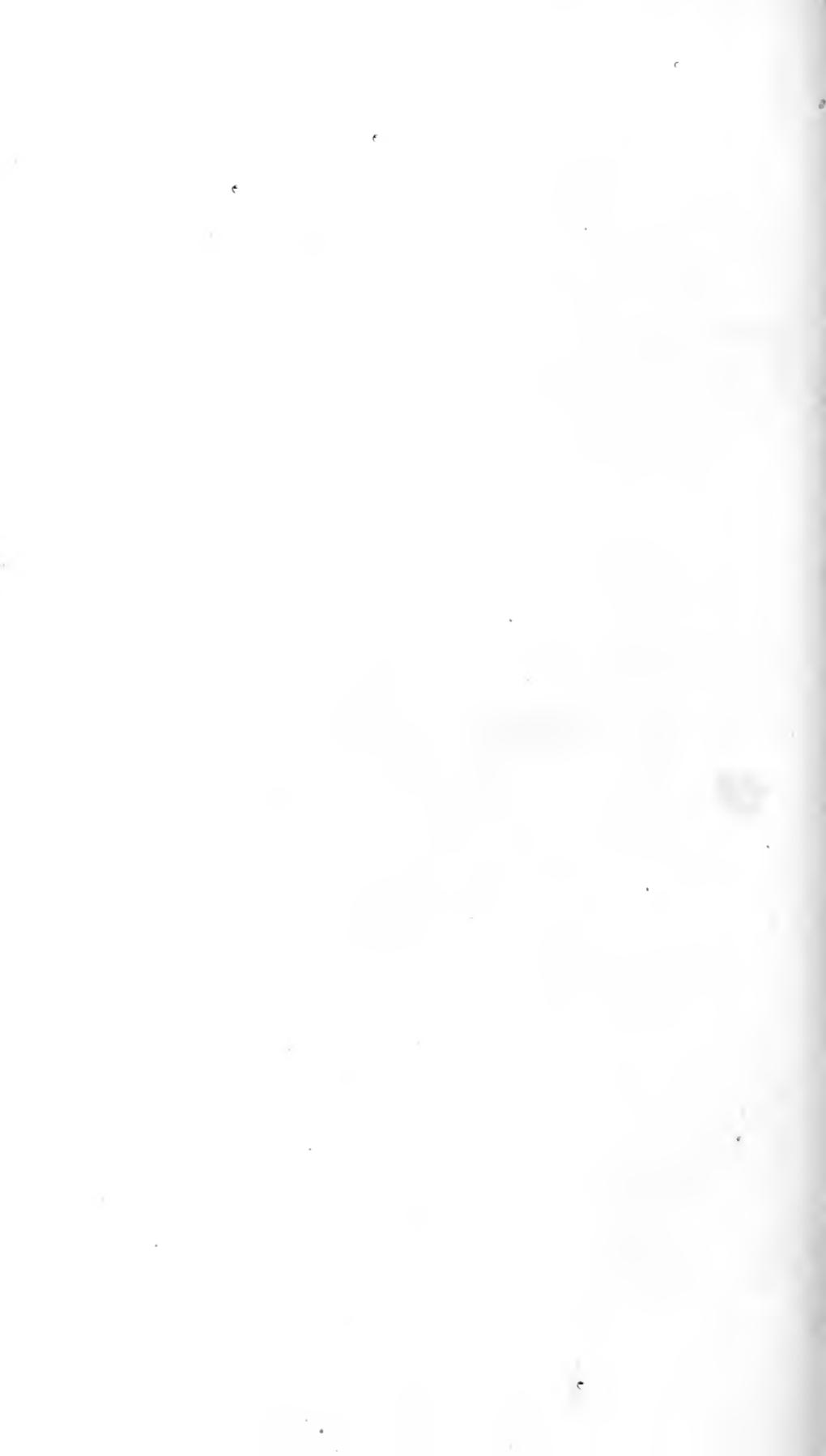
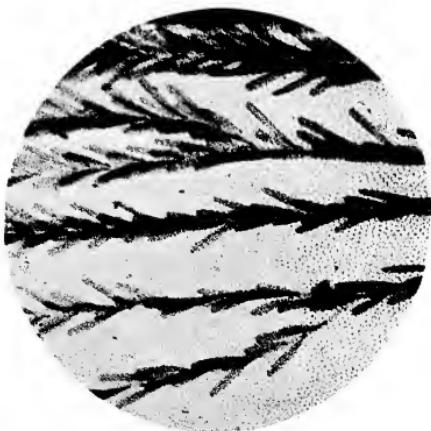


Plate III.



Culex salsus, Theo. ♂.



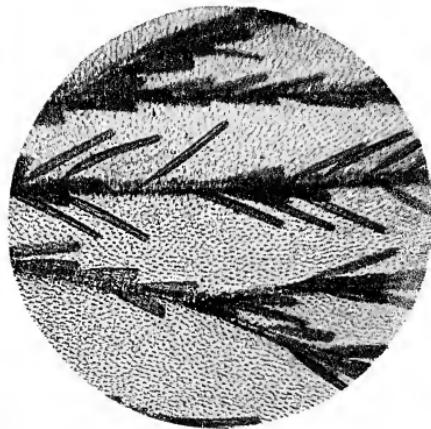
Culex salsus, Theo. ♀.



Mimeteoculex kingii, Theo. ♀.



Mimeteomyia apicotriangulata, n. sp. ♀.



Chaetocruiomya sylvestris, n. sp. ♀.



Brevirhynchus magnus, Theo. ♀.

Wing Scales.

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Plate IV.



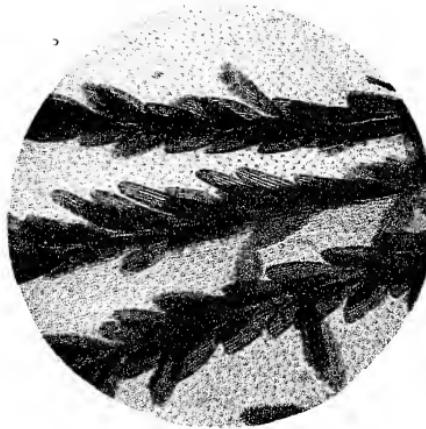
*Taeniorhynchus violaceus*, Theo. ♀.



*T. violaceus*, Theo. ♂.



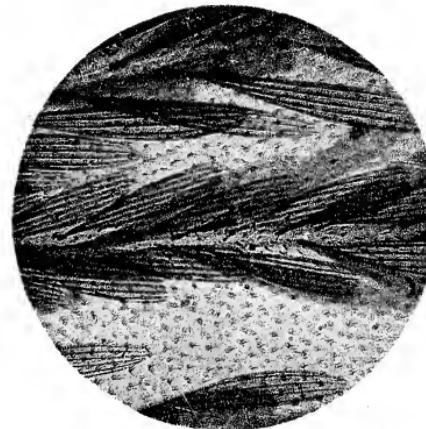
*Mucidus sudanensis*, Theo. ♀.



*Rachiosoura sylvestris*, n. sp. ♀.

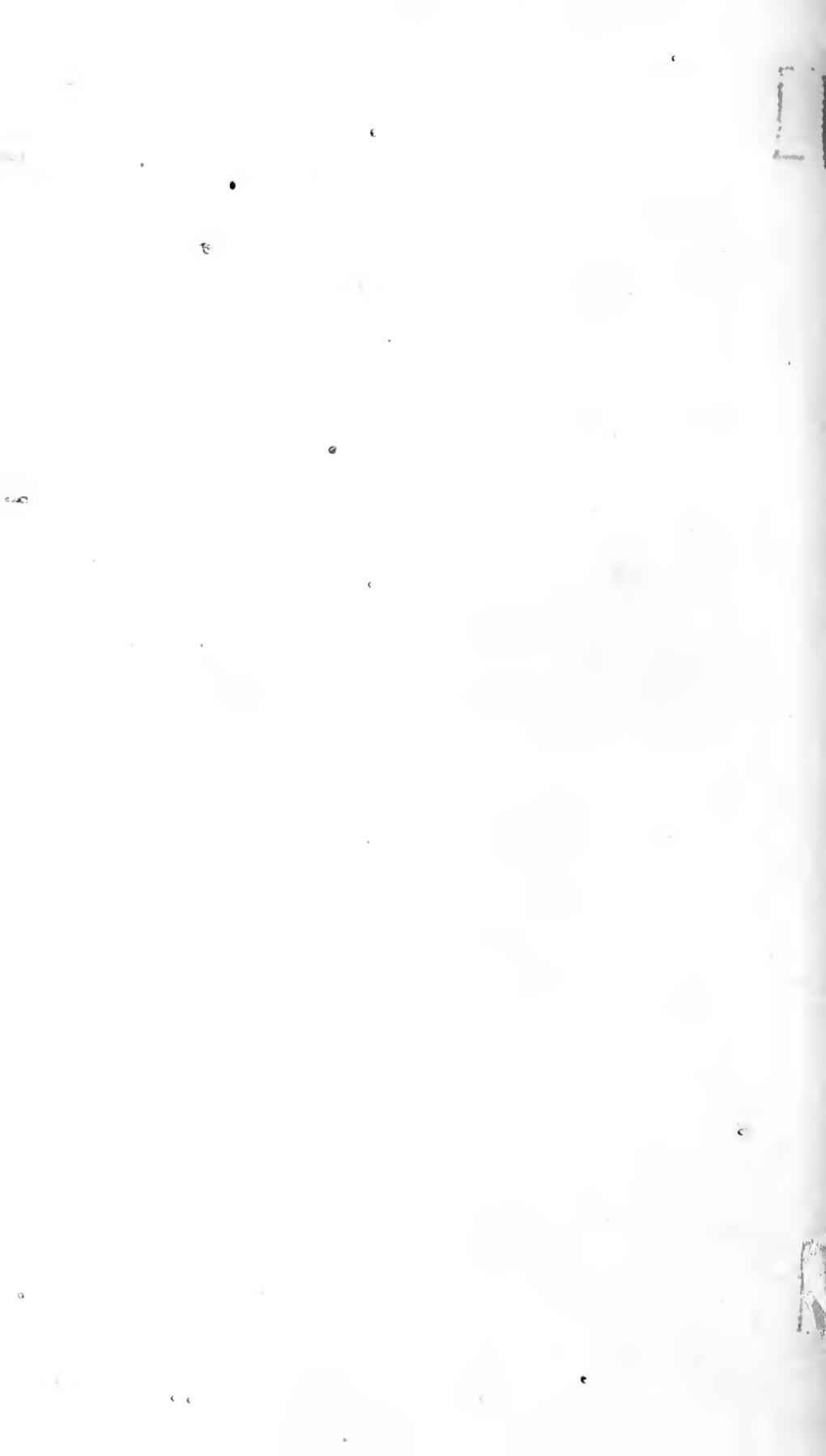


*Grabhamia ocellata*, n. sp. ♀.



*Chrysoconops pygmaeus*, Theo. ♀.

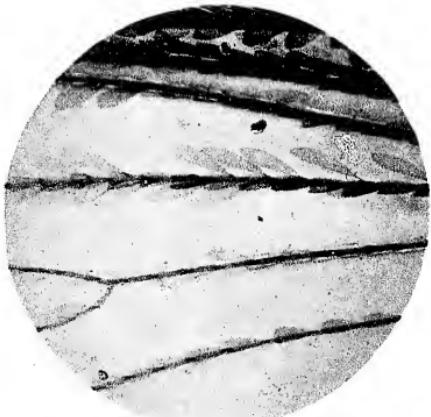
Wing Scales.



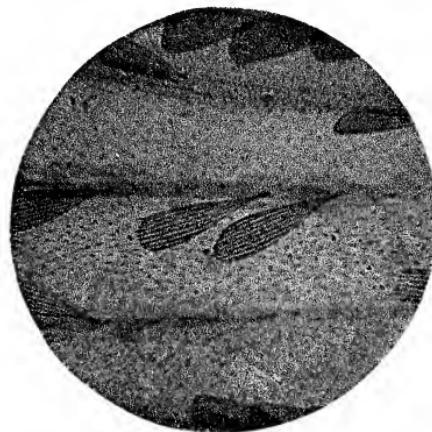
## Plate V.



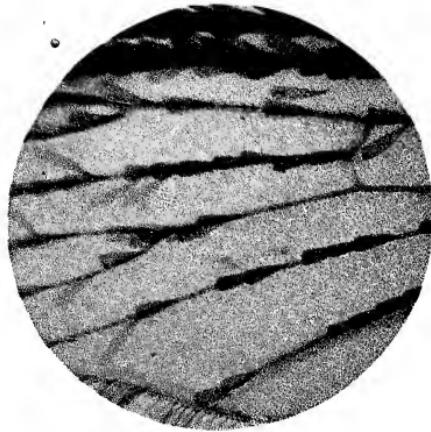
Bolbodeomyia complex. Theo. ♀.



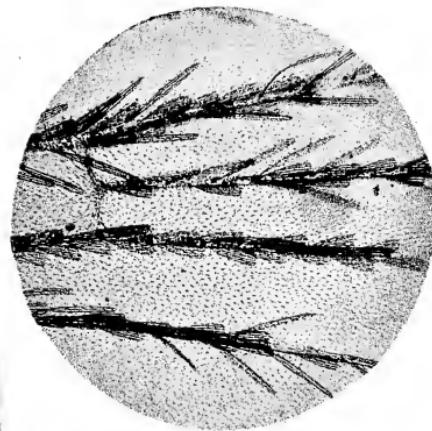
Uranotaenia pallidocephala. Theo. ♀.



Mimomyia minuta. Theo. ♂.



Mimomyia circumtestacea. Theo. ♀.



Ficalbia simplex. Theo. ♀.



Orthopodomyia maculipes. n. sp. ♀.

Wing Scales.

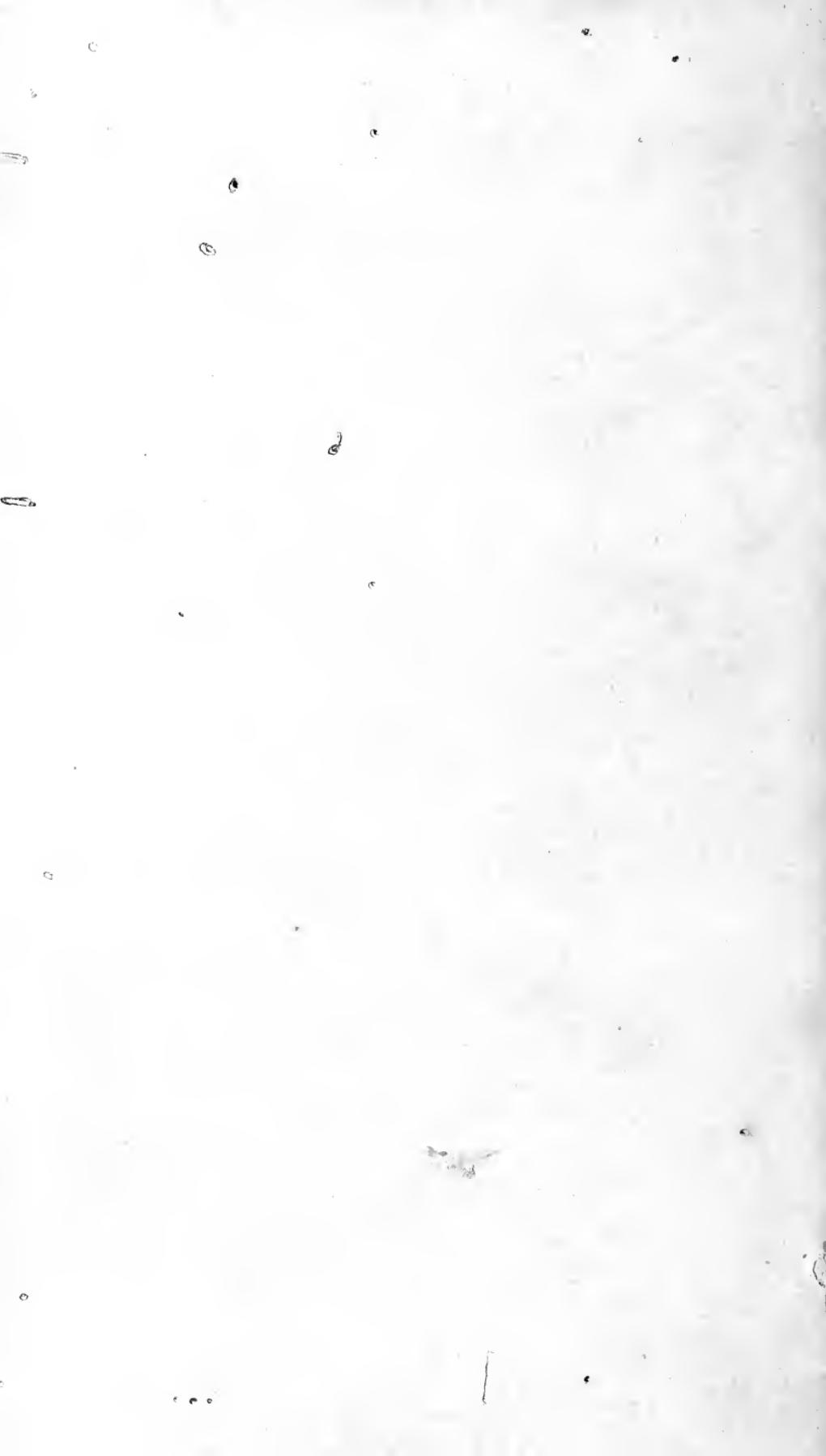


Plate VI.



*Chagasia fajardoi.* Lutz. ♀.



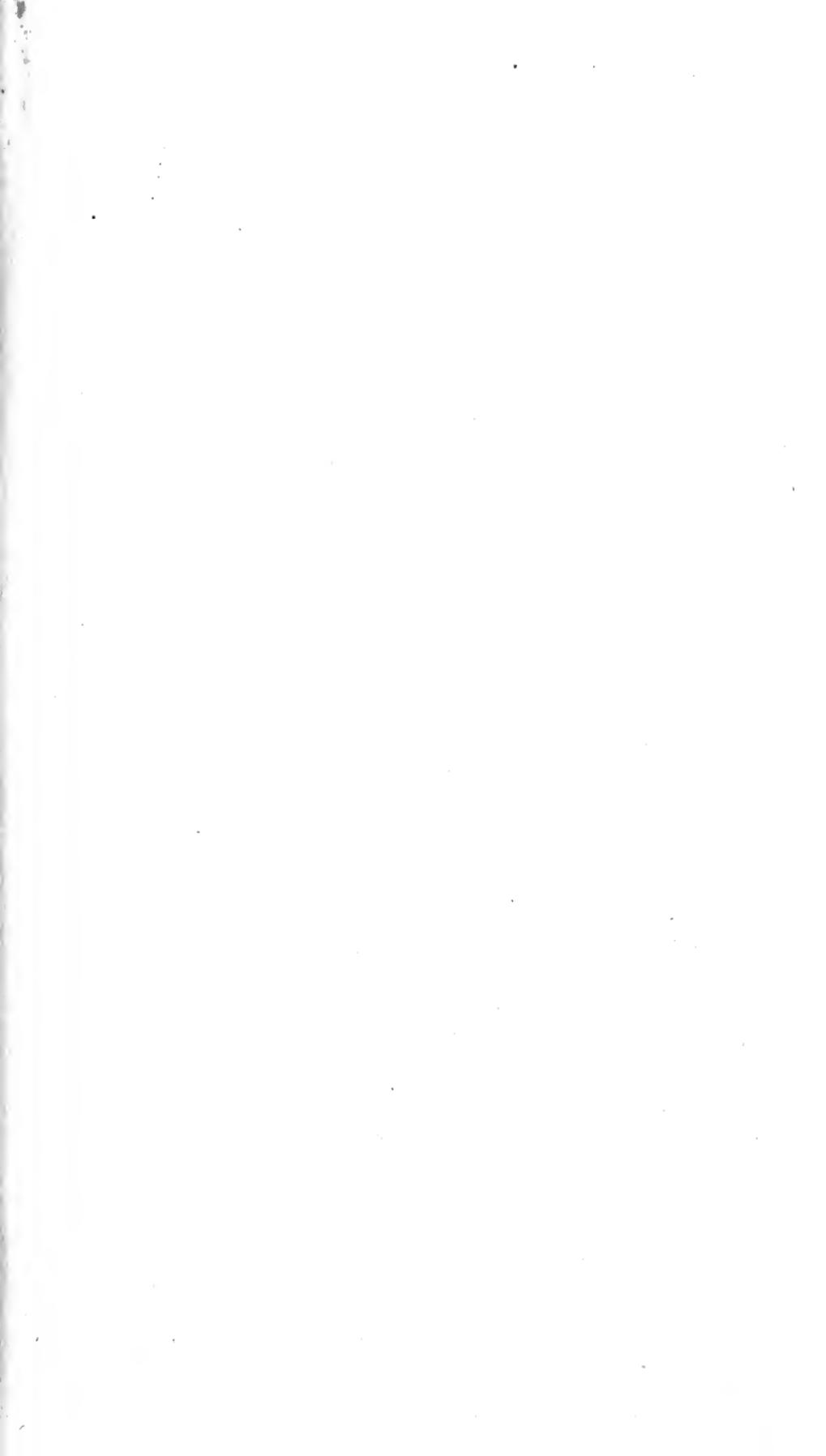
*Manguinhosia lutzi.* Cruz. ♀.



*Myzorhynchella nigritarsis.* Chagas. ♀.

Enlarged Wings.







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v. 5 A monograph of the Culicid